JOURNAL
OF THE
ARNOLD ARBORETUM

VOL. XXIV JULY, 1943 NUMBER 3

A SECOND SUMMARY OF THE SCROPHULARIACEAE OF NEW GUINEA*

FRANCIS W. PENNELL

With five plates

THE third series of Archbold Scrophulariaceae from New Guinea differs from its predecessors in coming from the western or Netherlands half of the island.[1] The specimens have again been gathered by Mr. L. J. Brass, but this time some were collected jointly with Dr. E. Myer-Drees, a forester who accompanied the expedition on behalf of the Netherlands government. The expedition entered from the northern coast and climbed Mt. Wilhelmina in the Snow Mountains. The Scrophulariaceae found at high altitudes, mostly species of *Hebe* and *Euphrasia*, seem to be wholly endemic, and show what a break must occur in the highest zones of vegetation between this mountain and the previously visited Carstensz Peak in the Nassau Range, several degrees to the westward.[2]

Since political conditions will probably prohibit for some years further botanical exploration of the mountains of New Guinea, it seems appropriate to present now a summary of our present knowledge of the Scrophulariaceae of the island. It is nineteen years since the last such record, "Die Scrophulariaceen Papuasiens,"[3] by Dr. R. Schlechter, a study enumerating 26 species in all, 19 of which were lowland and 7 alpine. With continued exploration, figures for both the lowland and the highland species have increased, but the lowland mainly by the addition of widespread Indo-Malayan plants, while the highland count builds up by endemic restricted species. The figures now are 34 for the lowland and 25 for the highland, making a present total of 59 species. The sharp separation of lowland

---

*Botanical Results of the Richard Archbold Expedition.

[1] For account of the Third Archbold Expedition, which visited New Guinea in 1938, see Richard Archbold's "Unknown New Guinea" in Nat. Geogr. Mag. **79:** 315–344. 1941.

[2] See "Report on the Botany of the Wollaston Expedition to Dutch New Guinea, 1912–13," by Henry N. Ridley, in Trans. Linn. Soc. II. Bot. **9:** 1–284. 1916.

[3] In Bot. Jahrb. **59:** 99–117. 1924.

and highland floras for this family in New Guinea, first pointed out by Schlechter and discussed in my reports on the Scrophulariaceae of the First and Second Archbold Expeditions,[4] is made more emphatic as collections accumulate. In this family it is a tribal rather than a generic matter, the Gratioleae and Buchnereae being lowland, and the Veroniceae and Euphrasieae alpine.

To make the present summary as complete as possible, it will be necessary to consider again some problems based upon the earlier expeditions and therefore concerning plants of eastern New Guinea. Also, there have reached me, either directly or through the Arnold Arboretum, various collections made by Mrs. Mary Strong Clemens in the mountains of the Morobe District or the Saruwaket Range, both being in Northeastern New Guinea. These will also be reported in the present paper.

But this material, altogether, does not contain many collections, and it would have been indeed desirable to have seen what specimens are in the herbarium at Buitenzorg, Java, and in the herbaria of Germany and England. But, even with those, any enumeration now is but a milestone directing to the task yet before us in adequately collecting for study the New Guinean flora. There are still undescribed lowland Scrophulariaceae, though these will be vastly outnumbered by the alpine species of *Hebe* and *Euphrasia* certain to be revealed as expeditions reach more isolated mountain areas.

As in previous papers, the present summary will present keys when thought needed. Additions to the island's flora will be starred. It hardly seems necessary to explain the obvious abbreviations to herbaria: AA — Arnold Arboretum; ANSP — Academy of Natural Sciences of Philadelphia; GH — Gray Herbarium; Mich — University of Michigan.

KEY TO THE GENERA IN NEW GUINEA

A. Corolla with the upper lobes external, overlapping in the bud; stigmas distinct; leaves opposite or ternate, often glandular-punctate; lowland. (Antirrhinoideae-Gratioleae).
  B. Anther-cells separated on short arms of the connective; leaf-blades glandular-punctate.
    C. Anthers all developed, polleniferous; capsule globose to ovoid; sepals alike; bracts leaf-like, the inflorescence foliose.
      D. Bracteoles none; sepals distinct; capsule depressed-globose, equally septicidal and loculicidal; seeds longitudinally lined; corolla 4–5 mm. long; leaf-blades ovate, petioled............................1. *Poarium.*
      DD. Bracteoles developed, a pair beneath the calyx; sepals united proximally; capsule globose to ovoid, primarily loculicidal; seeds vestigially reticulate to smooth; corolla 7–15 mm. long; leaf-blades various..2. *Limnophila.*
    CC. Anthers unequally developed, one cell of those on longer pair of filaments abortive; capsule conic, twice as long as wide, septicidally and then loculicidally dehiscent; sepals unequal, the posterior largest; bracteoles present beneath calyx; bracts much smaller than the leaves, the inflorescence of spikes or spike-like racemes............................3. *Adenosma.*
  BB. Anther-cells contiguous.

---

[4] First Expedition reported in Brittonia **2:** 177–188. 1936, and **3:** 95. 1938; Second Expedition in Jour. Arnold Arb. **20:** 75–84. 1939.

C. Bracteoles developed, a pair at base of the unequal sepals; corolla white, with violet lines; anther-cells parallel; capsule about equally septicidal and loculicidal; leaf-blades glandular-punctate.......................4. *Mella.*

CC. Bracteoles none; corolla more or less violet-blue or purplish; anther-cells divaricate; leaf-blades not (or in some species of *Lindernia* slightly) punctate.

D. Anterior filaments straight, from their lowest contact free from the corolla-tube; capsule loculicidal; sepals united proximally; bracts subulate..5. *Mazus.*

DD. Anterior filaments adnate to corolla as antero-lateral ridges, distally free and each sharply bent back upon itself (this appearing as a knob-like process), thence abruptly ascending; capsule septicidal.

E. Placenta covering entire width of the septum; capsule 7 mm. long, globose-ovoid; corolla 20 mm. long, pale purple; leaves sessile, lanceolate-attenuate, the longer 10–15 mm. long......6. *Artanema.*

EE. Placenta covering median half or less of septum, which, including its bare lateral portions, persists as a thin plate; capsule globose-ovoid to linear-cylindric; corolla smaller; leaves petioled or sessile, the blades much smaller.

F. Sepals distinct or united partially, plane, the calyx, if as long as the capsule, not investing it; bracts all opposite, usually leaf-like (subulate only in *L. antipoda*)................7. *Lindernia.*

FF. Sepals united nearly throughout, the calyx exceeding the capsule and closely investing it; bracts foliose or more usually subulate, the pedicels (by suppression of internodes) sometimes in fours...8. *Torenia.*

AA. Corolla with the lower or lateral lobes external, overlapping in the bud; stigmas wholly united, capitate or punctiform; leaf-blades not punctate. (Rhinanthoideae).

B. Upper lobes of corolla simply spreading, distinct or united; anthers all distinct, glabrous, unawned; seeds many, wingless.

C. Sepals distinct; stamens two, the postero-lateral pair alone developed; anther-cells equal; corolla tubular-campanulate to rotate; seeds flattened, smooth; pedicels not bracteolate; alpine. (Veroniceae).

D. Corolla 25–28 mm. long, the lobes five, much shorter than the tube; flowers solitary, sessile; stems woody...................9. *Detzneria.*

DD. Corolla smaller, the lobes (by fusion of the posterior) appearing four, as long as or longer than the tube; flowers racemose, pedicelled.

E. Capsule turgid, septicidal; stems woody, erect or diffuse...10. *Hebe.*

EE. Capsule flattened, loculicidal; stems herbaceous, prostrate...11. *Veronica.*

CC. Sepals united at least half their length; stamens four, both pairs developed; anther-cells not equal; corolla campanulate or salverform, the tube longer than the five distinct lobes; capsule loculicidal; seeds reticulate; pedicels bibracteolate; lowland. (Buchnereae).

D. Corolla campanulate, yellow; anther-cells two, unequal; calyx not tubular.

E. Calyx symmetrical, externally glabrate, internally densely and softly hairy, the hairs appearing as a fine ciliation of the triangular calyx-lobes; corolla 5–6 mm. long, spreading-campanulate; capsule 5 mm. long, wholly loculicidal; leaves linear, entire or with a pair of slender lobes...12. *Sopubia.*

EE. Calyx asymmetrical, deeply cleft anteriorly and distally so upcurved that the short free lobes appear as tips to upper side of corolla and capsule, externally densely hispid, internally glabrous; corolla 17–20 mm. long, more narrowly campanulate; capsule 7–8 mm. long, secondarily also somewhat septicidal; leaves linear-lanceolate, entire...13. *Centranthera.*

DD. Corolla salverform, the narrow throat hairy within; anther-cell one, the other lost by abortion; calyx tubular, more or less ribbed.
  E. Corolla-tube straight, the corolla pink, bluish or white; ribs of calyx relatively faint; leaf-blades narrowly elliptic to linear-lanceolate. . . . . 14. *Buchnera*.
  EE. Corolla-tube decurved near apex, the corolla reddish-purple, orange-yellow, or white; ribs of calyx pronounced; leaf-blades linear to filiform . . . . 15. *Striga*.

BB. Upper lobes of corolla united to form a concave galea, the white or violet corolla strongly zygomorphic; anthers cohering or distinct, the cells hairy and unequal, awned; capsule loculicidal; seeds few, with slightly raised longitudinal wings (or wing-like ridges); alpine. (Euphrasieae) . . . . 16. ***Euphrasia***.

*1. **Poarium** Desvaux

(Genotype, *P. veronicoides* Desv., the only original species)

This generic name, appearing in Hamilton's Prodromus Plantarum Indiae Occidentalis, p. 46, 1825, is the oldest applicable to the group to which I have applied the recent name *Lendneria* Minod of 1918. It is a genus of some 20 species, distinguishable from *Stemodia* L., also neotropical, by seeds lined or ridged instead of vestigially reticulate, capsules thinner-walled, bracteoles wanting instead of present beneath sepals, leaf-blades petioled instead of clasping, and usually (but not constantly) by corolla-throat hairy within on the upper instead of the lower side. The following much-described species, a widespread tropical weed, proves to be also in New Guinea.

*1. **Poarium verticillatum** (Miller) comb. nov.

Erinus verticillatus Miller, Gard. Dict. ed. 8. n. 5. 1768. Collected at Vera Cruz in 1731 by William Houstoun; type seen at British Museum in 1930.

This was later described as *Capraria humilis* Ait. (1789), as collected in the East Indies by J. G. Koenig; again as *Stemodia parviflora* Ait. (1812), its best known name and actually based on *Erinus verticillatus;* and finally as *Poarium veronicoides* Desv. from Hispaniola, the type of which, in the Museum d'Histoire Naturelle at Paris, I saw in 1930.

NORTHEASTERN NEW GUINEA: Morobe District, Lae, *Mary S. Clemens 10447* (AA); Malahang Station, mission grounds, *Mary S. Clemens* on May 29, 1940 (ANSP).

2. **Limnophila** R. Brown

Schlechter (in Bot. Jahrb. **59:** 100. 1924) credits four species to New Guinea and the Bismarck Archipelago, distinguishing them by key and giving their occurrence. These are all Indo-Malayan and are presumably immigrants to New Guinea from farther west. Two, *L. aromatica* (Lam.) Merr. and *L. fragrans* (Forst.) Seem., have been already reported from earlier Archbold Expeditions in Brittonia **2:** 181. 1936, and in Jour. Arnold Arb. **20:** 76. 1939. Of these *L. aromatica* appears to occur at low altitudes throughout the island, and it was collected in 1938 on the Balim River (*Brass 11827*). *L. rugosa* (Roth) Merr., probably equally widespread, has been gathered at Hombron Bluff, British New Guinea, by *L. J. Brass* (no. *1651*), and at the Kajabit Mission, Morobe District, Northeastern New Guinea, by *M. S. Clemens* (no. *10437K*), the latter getting it from "girls who prize the fragrant leaves," and the former stating that the natives carry it in their armbands, using it at dances and feasts. Brass reports it as smelling "strongly of aniseed" and describes the flower as with "lavender blue mouth, tube yellow." The remaining species is the widespread oriental aquatic, *L. sessiliflora* (Vahl) Blume.

3. **Adenosma** R. Brown

Schlechter (l. c. 102) credits two species to New Guinea, *A. javanicum* (Bl.) Koord. and *A. papuanum* Schlechter, to which in 1939 I added *A. ternatum* and now propose *A. punctatum*. The first species, an Indo-Malayan plant remarkable for the resemblance of its calyx to the *Bacopa* alliance of neotropical America, is only remotely related to the others. The four may be distinguished as follows:

A. Sepals hirsute, not reticulate, the outer lanceolate to oblong-lanceolate, 2 to 4 times the width of the inner two; flowers in definite spikes, the bracts much smaller than the leaves; capsule sulcate on septal line; leaf-blades dentate; stem erect.
  B. Root perennial; stem hirsute, not glandular.
    C. Leaves ternate, the blades minutely glandular-punctate beneath, 2–2.5 cm. long; corolla 10 mm. long, externally glabrous; capsule 7–8 mm. long. . . . . 1. *A. ternatum*.
    CC. Leaves opposite, the blades with larger glandular dots, 1.2–1.5 cm. long; corolla 7–8 mm. long, externally finely pubescent; capsule 5 mm. long. . . . . 2. *A. punctatum*.
  BB. Root annual; stem finely pilose with glandular hairs; leaf-blades 1.8–2.9 cm. long; corolla 12 mm. long, externally finely glandular-pubescent. . . . . 3. *A. papuanum*.
AA. Sepals finely pubescent, strongly reticulate, the outer widely ovate-cordate, many times the width of the inner two; flowers isolated in axils of the functioning leaves; capsule not sulcate over septum; leaf-blades crenate; stem extensively repent. . . . . 4. *A. javanicum*.

1. **Adenosma ternatum** Pennell in Jour. Arnold Arb. **20:** 77. 1939.

Collected by *L. J. Brass* (no. *7816*) on the Fly River in British New Guinea.

*2. **Adenosma punctatum** sp. nov.

Herba perennis, 3–4 dm. alta, ramosa; caulis et rami teretiusculi, hirsuti, eglandulosi; folia opposita, petiolata, ovata, obtusa, basi rotundato-cuneata, margine dentata, utrinque hirsuto-pubescentia, laminis 1.2–1.5 cm. longis, 9–12 mm. latis, petiolo 5–10 mm. longo; flores inferiores plus minusve remoti, alii in racemum spiciformem congesti; bracteolae duae, lineares, calyce breviores; sepala inaequalia, lanceolata vel lineari-lanceolata, 5–6 mm. longa; corolla 7–8 mm. longa, tubulosa, bilabiata, extus minute pubescens, labio supero apice retuso, labio infero hirsuto, trilobato, lobis retusis; stamina glabra, connectivis globosis, antherarum superarum cellulis aequalibus, sed inferarum uno rudimento inaequalibus; capsula 5 mm. longa, nigra, latere ad septum sulcata, loculicida et tardius etiam septicida; semina 0.3 mm. longa, ovoidea, minute lineata.

Root not seen, but thickened bases with several stems ascending therefrom denote a perennial duration. Stem 3–4 dm. tall or more, branched (many branches abbreviated, forming axillary leafy fascicles, but the upper branches ascending-spreading). Stem and branches slightly angled, laxly foliate. Leaves opposite, petiolate, the blades ovate, obtuse, dentate, above pilose-hirsute, beneath paler and glandular-punctate, hirsute on the larger veins, 1.2–1.5 cm. long, 9–12 mm. wide, at base widely cuneate or rounded to hirsute petioles 5–10 mm. long. Bracts smaller, the upper nearly spatulate and not exceeding the sepals. Lower flowers few and isolated, the upper numerous and forming short spike-like racemes. Lower pedicels becoming 2 mm. long, the upper shorter. Bracteoles linear, shorter than the calyx. Sepals unequal, lanceolate, the inner nearly linear, all obtuse, 5–6 mm. long, hirsute, the uppermost longest and widest, oblong-lanceolate. Corolla 7–8 mm. long, tubular-bilabiate (without record of color), externally finely pubescent; upper lip projecting-arched, its lobes rounded, scarcely distinct at the retuse apex; lower lip 2-ridged and pilose-hirsute thereon, distally with three retuse lobes. Filaments glabrous, the anterior pair longer; connective knob-like; postero-laterals with two nearly equal anther-cells, antero-laterals with one anther-cell developed, the other rudimentary. Stigmas wide, apparently plate-like, the apex of the fused styles thick-winged. Capsule 5 mm. long, conic, distally attenuate, black, firm, laterally furrowed on septum, loculicidal and secondarily somewhat septicidal. Seeds 0.3 mm. long, ovoid, brown, minutely lined.

NORTHEASTERN NEW GUINEA: Morobe District, Malolo Mountains, alt. 240–270 m., *Mary S. Clemens 4359* (AA, TYPE), November 1936, in late flower and fruit.

The name refers to the strong dotting of the leaves, but there are other species, especially *A. glutinosum* (L.) Druce, that show it as pronouncedly.

3. **Adenosma papuanum** Schlechter in Bot. Jahrb. **59:** 103. 1924.

Northeastern New Guinea.

4. **Adenosma javanicum** (Blume) Koorders. See Schlechter, l. c. 102. 1924.

Northeastern New Guinea.

4. **Mella** Vandelli

Differs from *Bacopa* Aubl. (1775) and *Herpestis* Gaertn. fil. (1807) in definitely bilabiate corollas, pinnately veined leaf-blades, and erect habit. I have previously used for this dominantly neotropical genus the name *Caconapea* Cham. (1833), the earliest typifiable generic name, since *Mella* (Vand. Fl. Lusit. et Bras. 43. 1788) appeared without citation of species. The latter would therefore be invalid under the American Code but valid under the new International Rules of Botanical Nomenclature. There are a few oriental species, the following extending to New Guinea and northern Australia.

1. **Mella floribunda** (R. Br.) comb. nov.
Herpestis floribunda R. Br. Prodr. Fl. Nov. Holl. **1:** 442. 1810.

Originally described from tropical northeastern Australia. Collected in British New Guinea by L. J. Brass, no. *3730*, and reported as *Bacopa floribunda* in Brittonia **2:** 181. 1936.

*5. **Mazus** Loureiro

Both Brass' and Mrs. Clemens' collections bring this genus into the flora of New Guinea, its representative being the common tropical weed that has been included in *M. japonicus* (Thunb.) Kuntze, but which seems to be separable by the following contrast:

A. Leaf-blades widely oblong to nearly oval, cuneately narrowed to petioles often as long as the blades; lower pedicels usually longer than the calyces; plants (stems, leaves, pedicels, and calyces) minutely, and scarcely or not glandularly, pubescent, or (especially the leaves) glabrous.................... *M. japonicus.*

AA. Leaf-blades oblanceolate to narrowly obovate, primarily runcinate-lobed, attenuate to ill-defined petioles; lower pedicels usually about equaling the calyces; plants hirsute-pubescent, the hairs largely glandiferous............... *M. goodenifolius.*

Mazus japonicus, described from Japan, is mainly a plant of warm temperate climates, and has become adventive to the New World. *M. goodenifolius* is more definitely tropical and oriental. I had suspected that it would prove to be Loureiro's *rugosus* from Cochinchina, but his description of the leaf-shape precludes that possibility.

*1. **Mazus goodenifolius** (Hornemann) comb. nov.

Gratiola goodenifolia Hornemann, Enum. Pl. Hafn. 19. 1807. Original description not seen, but its diagnosis[5] quoted in Willd. Enum. Pl. Hort. Berol. 654. 1809, where it is included as a synonym of *Hornemannia bicolor* Willd., there described from "India orientalis." I suspect from the alteration of Willdenow's primary diagnosis to "H. foliis obovatis basi integerrimis, calycibus patulibus pedunculisque glabris," that the latter was based primarily upon material of *M. japonicus,* since the omitted account of an incised-serrate narrow leaf-blade would denote the plant now considered, while the allusion to glabrous pedicels and calyces could only be to *M. japonicus.* In both the corolla would be bicolorous, the upper lip blue, the lower white.

An oriental weed, widespread over New Guinea. Collected in 1938 by L. J. Brass in Netherlands New Guinea, no. *11403* from Bele River, northeast of Lake Habbema, and no. *12925* from Bernhard Camp on the Idenburg River. Also gathered by Mary S. Clemens in the Morobe District of Northeastern New Guinea, no. *4975* in 1937 from Ogeramnang, and no. *11286F* in 1940 from Matap.

6. **Artanema** D. Don

(Genotype, *Torenia fimbriata* Hook., from Australia.)

1. **Artanema longifolium** (L.) Vatke.

Earlier than my record (in Jour. Arnold Arb. **20:** 78. 1939), this wide-ranging Indo-Malayan plant had been gathered by Branderhorst in 1907 at Merauke in southeastern Netherlands New Guinea and reported by Diels and Lanjouw in Nova Guinea Bot. **14:** 534. 1928.

7. **Lindernia** Allioni

With the including of *Ilysanthes* Raf. and the arising of several problems of interpretation, it seems desirable to consider this genus rather fully. The following key distinguishes all species that I have seen from New Guinea.

A. Capsule globose to ellipsoid-ovoid, not or only slightly exceeding the calyx; anterior filaments bearing anthers.
  B. Sepals united about ⅔ their length, glabrous................ 1. *L. crustacea.*

---

[5] "Gratiola (*goodenifolia*) foliis obovato-lanceolatis inciso-serratis basi integerrimis, racemis terminalibus."

BB. Sepals distinct nearly to base.

C. Leaf-blades oval to ovate, crenate-serrate to nearly entire, rounded or subcordate at base; bracts oval, the flowers axillary; capsule semiglobose; corolla 9–10 mm. long; sepals and angles of stem hirsute with long nonglandular hairs, the divaricate pedicels nearly glabrous........2. *L. hirta.*

CC. Leaf-blades ovate to nearly oblong, serrate-dentate; bracts subulate, the flowers in evident racemes; capsule ellipsoid-ovoid to ovoid; corolla 3–5 mm. long; pedicels glandular-puberulent or -pubescent.

D. Sepals hirsute with mostly glandless hairs; entire surface of stem and leaves hirsute with spreading glandless hairs, the main blades usually 3–6 cm. long and narrowed at base, only the uppermost rounded-cordate and sessile..3. *L. viscosa.*

DD. Sepals sparsely glandular-puberulent to glabrous; angles of stem sharp and with ascending short and stiff glandular hairs; leaf-blades glabrate (except for such lines on main veins beneath), usually narrower and smaller (1–2 cm. long), only the lower narrowed at base, the others rounded to sessile bases.............................4. *L. papuana.*

AA. Capsule much longer than wide, much exceeding the sepals, which are distinct nearly to base.

B. Leaf-blades sessile or clasping; corolla 5–10 mm. long; stems ascending or erect, often rooting at lower nodes.

C. Blades ovate to lance-ovate, crenate, rounded or cordate at base; anterior filaments anther-bearing; corolla 10 mm. long............5. *L. cordifolia.*

CC. Blades oblong to oblanceolate, usually narrowed at base; anterior filaments without anthers; corolla smaller.

D. Margin of blades crenate to dentate, the teeth appressed and not prolonged; corolla 7–8 mm. long.........................6. *L. anagallis.*

DD. Margin of blades sharply and deeply serrate, the teeth spreading and prolonged into setaceous tips; corolla 5 mm. long.........7. *L. ciliata.*

BB. Leaf-blades petioled, elliptic, sharply serrate, but the teeth not setaceous-tipped; corolla 13–15 mm. long; anterior filaments without anthers; stems extensively repent, the flowering portions abruptly erect......8. *L. antipoda.*

1. **Lindernia crustacea** (L.) F. v. Muell.

This widespread tropical weed, cited by Schlechter (l. c. 106) and me (in Brittonia **2:** 181. 1936, in Jour. Arnold Arb. **20:** 79. 1939) from many localities throughout New Guinea, is among Mrs. Clemens' recent collections from Morobe; there are also several collections made by Netherlands botanists in western New Guinea at the Gray Herbarium.

2. **Lindernia hirta** (Cham. & Schlecht.) comb. nov.

Gratiola pusilla Willd. cur. L. Sp. Plant. ed. 4. **1:** 105. 1797. "Habitat in India ad scaturigines." Descriptive of a small plant of the species now considered. Basis of *Lindernia pusilla* (Willd.) Schlechter in Bot. Jahrb. **59:** 106. 1924, unfortunately preoccupied by *L. pusilla* (Thunb.) Merr. in Philip. Jour. Sci. Bot. **11:** 312. 1916 [1917]. Although intended for the present species and citing *Gratiola pusilla* Willd. as a synonym, the latter was based upon *Selago pusilla* Thunb. Prod. Plant. Cap. 99. "1794–1800," the part containing p. 99 actually published in 1800; Thunberg's brief diagnosis "S. foliis ovatis serratis pilosis, flore terminali subsolitario" is impossible for our plant, as this has leaf-blades crenate to entire and an inflorescence of several pairs of long-pediceled flowers, while its occurrence is far from South Africa.

Torenia hirta Cham. & Schlecht. in Linnaea **2:** 571. 1827. "E. Luconia retulimus"; collected by Chamisso & Eschscholtz on the Romanzoff Expedition. Clearly the species now considered.

Vandellia scabra Benth. Scroph. Indicae 36. 1835. The name long applied to this species.

Recorded by Schlechter (l. c. 107) from the Bismarck Archipelago, and recently collected at Boana, Morobe District, Northeastern New Guinea, by Mary S. Clemens, no. *41468a* (Mich); also at Balim River, Netherlands New Guinea, by L. J. Brass, no. *11821* (AA, ANSP).

*3. **Lindernia viscosa** (Hornemann) Boldingh, Zakfl. Landbouwstr. Java 165. 1916, nomen; Merrill, Enum. Philip. Fl. Pl. **3:** 439. 1923, cum syn.[6]

Gratiola viscosa Hornemann, Enum. Pl. Hort. Hafn. 19. 1807. Description seen as quoted in account of *Hornemannia viscosa* (Hornem.) Willd. Enum. Pl. Hort. Berol. 654, 1809, where its habitat was given as "in India orientali." Descriptive of the species now considered in its leaves serrate and hispid, the uppermost cordate and sessile, the flowers racemose and decussate, and the peduncles viscid. On this we can only assume that *Lindernia viscosa* Boldingh was based; Merrill independently made the transfer in 1923, adding the name-bringing synonym.

Vandellia hirsuta Buch. Ham. ex Benth. Scroph. Indicae 36. 1835. The specific epithet long applied to this species, and more appropriate in its allusion to the copious hairiness rather than to the obscure glandularity.

A common Indo-Malayan species occurring east to western New Guinea, as shown by specimens in the Gray Herbarium from Manokoeari (*R. F. Janowsky 502*) and Piorienbivak near the Mamberamo River (*H. J. Lam 509*), Netherlands New Guinea.

*4. **Lindernia papuana** sp. nov. PLATE I, A.

Herba annua, 0.5–1 dm. longa, ramosissima; caulis quadrangulatus, angulis hispidulus; folia oblongo-ovata, acuta, serrato-dentata, glabrata (subtus proxime venis hispidula), laminis 1–2 cm. longis, 6–8 mm. latis, basi rotundatis, sessilibus; racemus terminalis, florum 3–7 paribus compositus, sparse glandulari-puberulentus; bracteae subulatae; pedicelli 5–8 mm. longi, adscendentes; sepala 2.5 mm. longa, lineari-lanceolata, acuta, glabrata; corolla 3–4 mm. longa, alba, glabra, labio supero rotundato fere integro, labio infero trilobato, lobis triangulari-ovatis; stamina glabra, omnia antherifera; capsula 2.5 mm. longa, ellipsoideo-ovoidea, glabra; semina 0.25 mm. longa, flava, cylindrica, truncata, obsolete reticulata.

---

[6] In Boldingh's "Zakflora voor de Landbouwstreken op Java," Batavia, i–viii. 1–204, October, 1916, a number of new binomials appear in his key to the families, genera, and species but in no case are these names indicated as new, nor in any case is a name-bringing synonym given; they are merely followed by the abbreviation "Bold.," and appear in the work only as follows:

"Bloeiwijze bijna geheel zonder bladen....................*Lindernia viscosa* Bold.
Bloemen in de bladokzels van goed ontwikkelde bladen....*Lindernia pusilla* Bold."

In so far as Boldingh's binomials were actually new, they were entered in Index Kewensis, Suppl. 9, 1935. Those in the Scrophulariaceae are *Ilysanthes procumbens* Bold. p. 164, and *Lindernia viscosa* Bold., *L. pusilla* Bold., *Microcarpaea minima* Bold., and *Stemodia verticillata* Bold. p. 165. It is manifest that Boldingh attempted to detect and to use the earliest published specific name in each case that was valid under the generic names accepted by him, but it is most unfortunate that he failed to indicate the original sources of these names. Strictly in accordance with the rules it is doubtful if these Boldingh names of 1916 should be accepted as validly published, due to their presentation in a most unorthodox manner. His method of publication transcends the provision of the International Code of Botanical Nomenclature that requires, in transferring specific names from one genus to another, that the name-bringing synonym must be cited. They may be considered as illegitimate names, but in view of the fact that they are now listed in Index Kewensis, Suppl. 9, 1938, sometimes with the name-bringing synonym added, it does seem desirable to accept them and to complete the record as has been done in this case. To complete the record in all cases will be difficult, for in the case of *Lindernia pusilla* Bold., who can say whether it was his intent to base this on *Gratiola pusilla* Willd. (1797), or on *Selago pusilla* Thunb. (1800), or on both? The Willdenow and Thunberg entities are actually two entirely different species; the first is a *Lindernia,* but the second apparently does not belong in this genus. As published by me in 1916 [1917], *Lindernia pusilla* Merr. must be typified by *Selago pusilla* Thunb., and the entry in Index Kewensis, Suppl. 9, 1938, for the combined Boldingh-Merrill transfers cites Thunberg's name as the one synonym. — E. D. Merrill.

Low much-branched herb. Stems diffusely ascending, 0.5–1 dm. long, four-angled, the angles slightly winged and bearing ascending short stiff glandless hairs. Leaf-blades oblong-ovate, serrate-dentate, obscurely and callosely ciliate, glabrate, beneath slightly paler and proximally with veins somewhat stiff-pubescent, mostly 1–2 cm. long, 6–8 mm. wide, rounded to sessile bases, only the lower attenuate proximally. Inflorescence a raceme of 3 to 7 pairs of flowers, the rachis and pedicels sparsely glandular-puberulent, the latter ascending, 5–8 mm. long; bracts (above the short wide lowermost one) subulate, 0.5–1.5 mm. long. Sepals 2.5 mm. long, linear-lanceolate, acute, minutely and obscurely pilose to glabrous. Corolla 3–4 mm. long, white, glabrous, the tube slightly widened horizontally, anteriorly 2-ridged; upper lip scarcely retuse at the truncately rounded apex, the lower slightly longer, the lobes triangular-ovate, widely deflexed-spreading. All filaments antheriferous, the posterior short, ascending, the anterior forming by their attachment the antero-lateral ridges of the corolla that distally project as minute rounded knobs, the free distal portions of the filaments arched-ascending. Capsule 2.5 mm. long, ellipsoid-ovoid, glabrous. Seeds 0.25 mm. long, yellow, cylindric, truncate, obsoletely reticulate.

NORTHEASTERN NEW GUINEA: Morobe District, Kajabit Mission, alt. about 300 m., *Mary S. Clemens 10907* (ANSP, TYPE, AA), Dec. 25, 1939, in flower and fruit (forming loose spreading mats along margin of slow rivulet). NETHERLANDS NEW GUINEA: Near Pioniorbivak, alt. 60 m., region of Mamberamo River, *H. J. Lam 511* (GH).

In Schlechter's account this was called *Lindernia trichotoma* (Benth.) Schlechter, based upon *Tittmannia trichotoma* Benth. in Wall. Numer. List no. 3943. 1831, a *nomen nudum*. That would be identical with the Indian species long known as *Vandellia multiflora* (Roxb.) G. Don, based upon *Torenia multiflora* Roxb. Fl. Ind. **3**: 96. 1832, a plant described as with smooth stem and merely subserrate leaves, agreeing with J. D. Hooker's statement that the leaves of the Bengal plant are entire or sinuate. Evidently the Papuan plant, with its stiffly hairy stem and rather sharply serrate-dentate leaves, cannot be this, nor do I identify it with any other known species.

5. **Lindernia cordifolia** (Colsmann) Merrill.

Gratiola cordifolia Colsmann, Prodr. Descr. Grat. 15. 1793; repr. in Archiv Bot. **2**: 244. 1799. "Habitat in graminosis humidiusculis Zeylon[a]e [a *D. König* collecta]." Leaf-blades described as "obsolete serratis."

The plant, represented by *Brass 5918*, from Dagwa, Oriomo River, British New Guinea, appears to be this well-known Indo-Malayan species rather than *Lindernia angustifolia* (Benth.) Wettst., as identified by me in Brittonia **2**: 182. 1936.

6. **Lindernia anagallis** (Burman f.) comb. nov.

Ruellia anagallis Burman f. Fl. Ind. 135. 1768. "Habitat in Java and Amboina."

Based upon plants collected in Java by Kleinhof and on Rumphius' description and illustration of the Amboina form, the latter because of the illustration being taken as the type. Unfortunately, the Academy lacks vol. 5 of Rumphius' Herbarium Amboinense, but Merrill's Interpretation of that work (p. 467. 1917) has identified Rumphius' plant as the species now considered. Also, Dr. Merrill has kindly supplied me with a tracing of Rumphius' figure. In a special paper on the species proposed by Burman f. (in Philip. Jour. Sci. **19:** 381. 1921), he says of *Ruellia anagallis*: "Burman's species is clearly identical with the very common and widely distributed form currently known as *Bonnaya veronicaefolia* Spreng." (As will be shown below, I think that Merrill was mistaken in identifying as this plant the older *Ruellia antipoda* L.; nor is it *Gratiola veronicifolia* Retz., either).

A common Indo-Malayan weed, extending east to New Guinea. This is the plant called *Ilysanthes veronicaefolia* (Retz.) Urb. by Schlechter (l. c. 108), who cites specimens from many parts of New Guinea, while I (in Brittonia **2:** 182. 1936, in Jour. Arnold Arb. **20:** 81. 1939) have cited further specimens from British New Guinea under the names *"veronicaefolia"* and *"antipoda."* Further collections are now at hand, viz. *Clemens 10830a* and *40615* (Mich) from the Morobe District of Northeastern New Guinea, and several specimens (GH) made by Netherlands collectors in western New Guinea.

7. **Lindernia ciliata** (Colsmann) comb. nov.

Gratiola ciliata Colsmann, Prodr. Descr. Grat. 14. 1793; repr. in Archiv Bot. **2:** 243. 1799. "E. Java. *Königius* non invenit." An excellent description of the species now considered.

A common Indo-Malayan plant that appears barely to reach New Guinea. This was reported by Schlechter (l. c. 109) as *Ilysanthes ciliata* from "Waighiou" Island, on the northern shore of Netherlands New Guinea.

8. **Lindernia antipoda** (L.) Alston.

Ruellia antipoda L. Sp. Pl. 635. 1753. "Habitat in Indiis." Based primarily upon account in L. Fl. Zeyl. 106. 1748. The latter careful description states that the leaves are oval, acutely and deeply serrate especially toward apex, at base narrowed, the stem is repent, the pediceled flowers several (5) to a raceme, the capsule thrice as long as the calyx, and the flowers relatively large (being like those shown in Rheede's Hort. Malabar. **9:** 113. *tab. 58.* 1689, but four times larger). All these details are clearly distinctive of the species now considered.

Gratiola veronicifolia Retz. Observ. Bot. **4:** 8. 1786. Clearly identical with *Ruellia antipoda*, as was recognized by Vahl, Enum. Plant. **1:** 98. 1805.

Gratiola ruelloides Colsmann, Prodr. Descr. Grat. 12. 1793; repr. in Archiv Bot. **2:** 243. 1799. "Habitat in Java et India orientali." Clearly distinctive of the species now considered. The name chosen leads me to suppose that Colsmann realized the identity of this with *Ruellia antipoda*. Based upon this is *Ilysanthes ruelloides* (Colsmann)[7] Schlechter in Bot. Jahrb. **59:** 109. 1924, the name used by him for the species now considered.

Gratiola reptans Roxb. Fl. Ind. cur. Carey **1:** 140. 1820. "A native of the Moluccas; from thence introduced into the [Calcutta] Botanic Garden." Descriptive of the species now considered, and giving the color as corolla "pale bluish pink," upper lip "of one pale segment," and lower lip as "broad, deeper coloured." *Bonnaya reptans* (Roxb.) Spreng., based upon this, has been the name longest used for this species.

A common Indo-Malayan weed, extending east to New Guinea. Re-

[7] With citation of "König" rather than "Colsmann."

ported by Schlechter (l. c. 109) from Netherlands and Northeastern New Guinea, and by me (in Jour. Arnold Arb. **20:** 81. 1939) from British New Guinea. Recently collected by Mrs. Clemens, at Wantoal, no. *41093* (AA), and at Boana, no. *41083* (Mich), both in the Morobe District of Northeastern New Guinea.

8. **Torenia** Linnaeus

This extensive Oriental genus is represented by at least three species in New Guinea.

Although a sharp line between *Lindernia* (in its present enlarged sense) and *Torenia* is not easy to draw, I think that the two should be considered as generically distinct. Usually they are readily distinguishable by the calyx consisting of separate or only slightly united plane sepals in *Lindernia,* whereas in *Torenia* the sepals are united nearly throughout and have the midvein of each raised into a ridge or a wing. But, in *Lindernia, L. crustacea* has sepals united over half their length, while in *Torenia* the sepal-ridges may be mere ribs, as in the case of *T. crenata,* below. In *Torenia* the corolla is usually larger and with angular open throat, whereas in *Lindernia* it is usually smaller and with flattened throat. Finally, in *Torenia* one finds in most species a racemose inflorescence or one contracted therefrom, in which the bracts are linear and much smaller than the foliage leaves, whereas in *Lindernia* the bracts are usually foliose. In our first species, *Torenia crenata,* the small flowers, unwinged calyx, and foliose bracts all led me to consider it a *Lindernia,* but I now incline to place generic value on another feature of the calyx. In *Lindernia* the sepals, whether distinct or joined, do not invest the capsule, but have their tips somewhat spreading, whereas in *Torenia* the sepals do invest the capsule, being curved about it and with their connivent tips projecting above it. On this understanding our first species will find its place in *Torenia.* It shows that in that genus too there is a tendency toward the suppression of the anthers of the anterior pair of stamens.

A. Calyx hirsute, the mid-veins of the sepals merely rib-like; corolla 7–8 mm. long, violet; attached portions of anterior filaments projecting as short knobs; pedicels over twice the length of the calyces; bracts foliaceous, the inflorescence clearly racemose; leaf-blades crenate, cuneately narrowed to the short petioles; stem erect, with ascending branches .... 1. *T. crenata.*

AA. Calyx finely pubescent or glabrous, the mid-veins of the sepals raised into thin wings; corolla larger; attached portions of anterior filaments not projecting; pedicels less than twice the length of the calyces; bracts subulate, the inflorescence (by suppression of an internode) usually seeming a 4-flowered cyme; leaf-blades dentate, the larger truncate to petioles at least ⅓ length of blades.

  B. Corolla 15–17 mm. long, violet or white; fruiting calyx narrowly ovoid, 15–16 mm. long, with 5 wings; leaf-blades acute, serrate-dentate, 3–4 cm. long; stem erect, laxly branched .... 2. *T. violacea.*

  BB. Corolla 10 mm. long, pink; fruiting calyx nearly circular, 6–8 mm. long, with 3 wings; leaf-blades obtuse, crenate-dentate, 1–2 cm. long; stem extensively repent, the flowering branches ascending or erect.... 3. *T. polygonoides.*

1. **Torenia crenata** (Pennell) comb. nov. PLATE I, B.

Lindernia crenata Pennell in Jour. Arnold Arb. **20:** 79. 1939. Lake Daviumbu, Middle Fly River, British New Guinea, *L. J. Brass 7824*. Known only from the original collection.

2. **Torenia violacea** (Azaola) comb. nov.

Mimulus violaceus Azaolo ex Blanco, Fl. Filip. ed. 2. 357. 1845. "Descubierta y descrita por el *Sr. Azaola,* ex Calauan." For identification of the species now considered see Merrill, Species Blancoanae 347. 1918. Although not adopted by Merrill, his evidence makes it necessary to take this as the earliest described name.

Torenia exappendiculata Regel in Acta Hort. Petrop. **5**: 271. 1877. "Ex horto Parisiensi accepimus. Patria verosimiliter India orientalis." Described as with small white flowers.

Torenia peduncularis Benth. in Wall. Numer. List, no. 3956. 1831, *nomen nudum* ("Maulmyne in Martabanica 1827"); Hook. f. Fl. Brit. Ind. **4**: 276. 1884. The latter cites specimens from Nepal to Assam and Penang, and credits the species also to Java and the Philippine Islands. Flowers described as "pale blue," but with white-flowered synonym, *T. alba* Ham., from Wallich's List. *Torenia peduncularis* is the name under which our species has been universally known.

A weedy plant, widespread over the Indo-Malayan subregion, and doubtfully extending east to New Guinea. Reported by Schlechter (l. c. 104) from Netherlands and Northeastern New Guinea; a single collection from the vicinity of Manokoeari, Netherlands New Guinea (*R. F. Janowsky 506*), is in the Gray Herbarium. This, however, is a small plant, less than 1 dm. tall, more hairy, with smaller, narrower, more closely serrate leaf-blades, and smaller corollas (10–12 mm. long) and calyces (11–12 mm. long). Perhaps it will prove distinct from the Indo-Malayan species, as is suggested by Schlechter's comment that it seldom exceeds 1.5 dm. in height, a small stature for *T. violacea*. The only other specimen seen associable with it is from Bali (*C. R. G. J. van Steenis 7588*), at the Gray Herbarium. The problem can be solved only by someone with much more material for consideration than is available in this country.

3. **Torenia polygonoides** Benth.

Torenia polygonoides Benth. in Wall. Numer. List, no. 3897. 1830, *nomen nudum* ("Singapur 1822"), Scroph. Indicae 39. 1835. "Hab. ad Singapore, *Wallich*."

A widespread Indo-Malayan species. Reported by Schlechter (l. c. 104) from Northeastern and by me (in Jour. Arnold Arb. **20**: 78. 1939) from British New Guinea.

9. **Detzneria** Schlechter

(Genotype, *D. tubata* Diels, of New Guinea)

A monotypic genus of Northeastern New Guinea.

1. **Detzneria tubata** Diels in Bot. Jahrb. **62**: 491. 1929.

Saruwaket Range, Northeastern New Guinea, at 3600 to 4000 meters altitude.

10. **Hebe** Commerson

This austral genus, so highly developed in New Zealand, is evidently one of the most characteristic groups of alpine heights in New Guinea. With the first species published in 1889 and only four described before 1930 the Archbold Expeditions have raised the number from New Guinea to twelve. Many more will appear as other alpine areas are reached, as each isolated highland has evidently developed its own species. The following key contrasts those known to date.

A. Leaf-blades serrate-dentate, the teeth obtuse or acutish; petioles more spreading; pubescence of stem and inflorescence of upcurved hairs.
  B. Serrations spreading, the leaf-blades sharply toothed; peduncles 10–30 mm. long, less than twice length of bracts; sepals lanceolate to narrowly ovate, somewhat pubescent; corolla red or reddish.
    C. Corolla red, its lobes as wide as or wider than long; sepals elliptic-ovate; peduncles spreading; leaf-blades narrowly elliptic, 1.5–2 cm. long, on evident spreading petioles; rachis and pedicels pubescent with upcurved brown hairs...1. *H. rubra.*
    CC. Corolla pale pink, its lobes longer than wide; peduncles ascending; sepals and leaf-blades elliptic-lanceolate, 0.5–1 cm. long, on ascending petioles; rachis and pedicels pubescent with upcurved brownish or grayish hairs...2. *H. thymelaeoides.*
  BB. Serrations ascending or appressed, the leaf-blades more obscurely toothed; leaves loosely set, the blades not or only slightly longer than the internodes; peduncles ascending, 30–50 mm. long, 2 to 4 times the length of the bracts; sepals narrowly obovate-elliptic to elliptic, glabrous; corolla white...3. *H. albiflora.*

AA. Leaf-blades crenate-serrate to entire, the teeth rounded.
  B. Leaf-blades oval to elliptic-oblong, evidently crenate-serrate or crenate.
    C. Rachis and pedicels with brown spreading hairs; petioles very short and wide, ascending against stem;[8] leaves not glutinous.
      D. Corolla and sepals externally pubescent; leaves lanceolate- to orbicular-ovate, 0.8–1.5 cm. long..........................4. *H. Lendenfeldii.*
      DD. Corolla externally glabrous; sepals glabrous or ciliate.
        E. Corolla pinkish or white, 8–14 mm. long; peduncles 20–40 mm. long, the rachis elongating; leaf-blades flat.
          F. Sepals partially ciliate to usually glabrous; pedicels equaling or longer than the bractlets; leaf-blades elliptic to elliptic-oblong, 7–16 mm. long; stem distally and inflorescence rufous-pubescent.
            G. Racemes mostly 5–10-flowered, the pedicels short in small-fruited forms, becoming 15–18 mm. long in large-fruited forms; capsule no wider than long, its narrow basal portion flattened-constricted; leaf-blades crenate-serrate about ⅔ their length, the midrib evident............5. *H. polyphylla.*
            GG. Racemes fewer-flowered, the pedicels to 9 mm. long; capsule wider than long; leaf-blades crenate beyond the middle, the midrib scarcely evident..............6. *H. carstensensis.*
          FF. Sepals ciliate throughout; pedicels shorter than the bractlets; leaf-blades oval or elliptic, 6–9 mm. long; stem and inflorescence more finely pubescent and with paler hairs........7. *H. ciliata.*
        EE. Corolla dark purple, 7–8 mm. long; racemes 1–3-flowered; peduncles 5–12 mm. long, the rachis short, the pedicels reaching 5–7 mm. long; capsule obovoid, rounded to base; leaf-blades crenate-serrate above the cuneate base, somewhat involute................8. *H. rigida.*
    CC. Rachis and pedicels with ascending or appressed hairs; leaves glutinous (at least in *H. Brassii* and *H. tenuis*).
      D. Hairs of inflorescence brown, upcurved-ascending; sepals ciliate and pubescent on midrib externally; corolla red, 9–10 mm. long; leaf-blades 0.7–0.9 cm. long, the petioles very short, ascending-appressed, ciliate; stems stout, erect, 2–3 dm. tall, the leaves as long as the internodes...9. *H. Brassii.*

---

[8] This assumed to be probably true for *Hebe Lendenfeldii,* described as with leaves "on very short stalks," and for *H. carstensensis* with leaves "sessile."

DD. Hairs of inflorescence grayish, minute, incurved-appressed;[9] sepals minutely ciliolate; leaf-blades 0.6–0.7 cm. long, the petioles more evident, ascending-spreading, glabrous; stem slender, diffuse, smaller, the leaves shorter than the internodes.

E. Corolla white, 6–7 mm. long; flowers several, in a pair of long-peduncled racemes at the apex of the uniformly finely pubescent stem. . . . . 10. *H. tenuis.*

EE. Corolla purple (magenta), 8–9 mm. long; flower solitary[10] at the apex of the bifariously puberulent stem. . . . . 11. *H. Vanderwateri.*

BB. Leaf-blades narrowly lanceolate, obscurely crenulate to nearly entire; corolla 12 mm. long; stems and branches densely foliose, shortly and densely pubescent. . . . . 12. *H. diosmoides.*

1. **Hebe rubra** Pennell in Brittonia **2**: 184. 1936. PLATE II, A.

BRITISH NEW GUINEA: Mt. Albert Edward, *L. J. Brass 4295* (TYPE) and *5677;* Murray Pass, Wharton Range, *Brass 4620.*

2. **Hebe thymelaeoides** Pennell in Brittonia **2**: 186. 1936. PLATE II, B.

BRITISH NEW GUINEA: Mt. Albert Edward, *L. J. Brass 4296* and *4297* (TYPE).

*3. **Hebe albiflora** sp. nov. PLATE III, A.

Frutex ramosissimus, 6–9 dm. altus; caulis pilis adscendentibus-incurvis brunneus; folia oblongo-lanceolata, acuta, serrato-dentata, fere glabra, subtus pallida, majora 2 cm. longa, 7–8 mm. lata; racemi 6–8 floribus compositi; sepala 4–4.5 mm. longa, elliptico-oblanceolata, glabra; corolla 7–8 mm. longa, alba, late campanulata, glabra; capsula 4 mm. longa, globoso-ovoidea; semina 0.5 mm. longa, circularia, laevia, complanata.

Stiff, much-branched shrub, 6–9 dm. tall, loosely foliose. Stem distally pubescent with brownish upcurved hairs, the old bark becoming glabrate. Leaves numerous, not or only slightly longer than the internodes, the blades oblong-lanceolate, acute, serrate-dentate throughout with low teeth, flat, dark green and glabrous above, beneath pale and with pilose midrib, 2 cm. long, 7–8 mm. wide, at base rounded to pubescent petioles 2–3 mm. long. Racemes brown-pubescent (with incurved hairs), 6–8-flowered, elongated, the peduncle becoming 30 to 50 mm. long, the pedicels 5–8 mm. long, slightly exceeding the lance-oblong bractlets. Sepals 4–4.5 mm. long, elliptic-oblanceolate, acute, glabrous. Corolla 7–8 mm. long, white, widely campanulate, glabrous throughout, the upper lip obovate-circular, the three lower lobes slightly narrower, nearly elliptic. Stamens glabrous throughout, the anthers about half the length of the filaments. Capsule 4 mm. long, globose-ovoid. Seeds 0.5 mm. long, circular, flattened, brown.

NORTHEASTERN NEW GUINEA: Morobe District, Ulap Trail, Matap, alt. 1500–1800 m., *Mary S. Clemens 11347* (AA, TYPE), Feb.–April 1940, in flower.

4. **Hebe Lendenfeldii** (F. v. Muell.) Pennell in Brittonia **2**: 184. 1936.

Based upon *Veronica Lendenfeldii* F. v. Muell. in Trans. Roy. Soc. Victoria **1**(2): 29. 1889, describing a plant collected by Sir William MacGregor in 1889 on Mt. Victoria in British New Guinea.

*5. **Hebe polyphylla** sp. nov. PLATE III, B.

Frutex ramosissimus, 2–8 dm. altus; caulis pilis patentibus ferrugineus; folia multa, elliptico-oblonga, obtusa, crenato-dentata, glabra, majora 0.7–1.6 cm. longa, 5–7 mm. lata; racemi 5–10 floribus compositi; sepala

---

[9] Pedicels of *Hebe Vanderwateri* described as "fein bestäubt."

[10] "Semper ?", asks Wernham.

4–5 mm. longa, oblonga, irregulariter ciliata; corolla 8–11 mm. longa, alba, late campanulata, glabra; capsula 2–4 mm. longa, obovoidea.

Stiff, much-branched shrub, 2–8 dm. tall, the upper branches ascending, densely foliose, the lower slender, diffusely spreading, with longer internodes and pairs of minute subulate leaves. Stem distally pubescent with ferruginous spreading hairs, below that bifariously so but on the proximal half glabrate or glabrous. Leaves numerous, and close-set by reason of the short internodes, the lower stem marked by the slightly raised petiole-rudiments of the fallen leaves: blades elliptic-oblong, obtusely rounded, crenate-dentate, flat, glabrous, 0.7–1.6 cm. long, 5–7 mm. wide, at base semi-petiolate (cuneately narrowed with entire ciliate margins) to a clasping base. Racemes brown-pubescent, 5–10-flowered, elongated, the peduncle becoming 20 to 40 mm. long, the pedicels 3–18 mm. long, about equaling to much longer than the linear-oblong bractlets. Calyx spongy (as judged by irregular wrinkling in drying) at base, the sepals (free above base) oblong, rounded, irregularly ciliate (mostly at apex), 4–6 mm. long. Corolla 8–15 mm. long, white, pinkish-tinged, widely campanulate, glabrous throughout, the upper lip nearly circular, the three lower lobes obovate-semicircular. Stamens glabrous, the anthers about ⅓ the length of the filaments. Capsule 2–6 mm. long, obovoid.

NETHERLANDS NEW GUINEA: 5 miles northeast of summit of Mt. Wilhelmina, alt. 3440 m., *L. J. Brass 9401* (AA, TYPE, ANSP), Aug. 1938, in flower and fruit (along streams in grassland); Snow Mountains, on and near Mt. Wilhelmina (seen also from 3 miles east of that summit), *Brass 9414* (AA, ANSP), and 7 km. northeast of summit, *Brass & Myer-Drees 9934* (AA, ANSP).

6. **Hebe carstensensis** (Wernham) Diels in Bot. Jahrb. **62:** 491. 1929.

Based upon *Veronica carstensensis* Wernham in Trans. Linn. Soc. II. Bot. **9:** 121. 1916, describing a plant collected by C. Boden Kloss in 1912–13 on Carstensz Peak, Snow Mountains (Nassau Range), Netherlands New Guinea.

*7. **Hebe ciliata** sp. nov. PLATE IV, A.

Frutex ramosus, 2–6 dm. altus; caulis pilis brevibus patentibus brunneus; folia multa, ovalia vel inferiora elliptica, obtusa, crenato-dentata, glabra glabratave, majora 0.6–0.9 cm. longa, 5–7 mm. lata; racemi 4–8 floribus compositi; sepala 4–5 mm. longa, obovato-oblonga, ciliata; corolla 7–8 mm. longa, pallide violacea vel alba, late campanulata, glabra; capsula 2–3 mm. longa, obovoidea.

Stiff shrub, 2–6 dm. tall, the rigid stems ultimately erect, the upper branches ascending-erect and densely foliose, the lower slender, diffusely spreading, with longer internodes and pairs of minute subulate leaves. Stem pubescent with short brown spreading hairs, proximally glabrescent or glabrate. Leaves numerous and close-set (the short internodes of the lower part of the stem marked as in the other species), the blades oval or the lower elliptic, obtusely rounded, crenate-dentate, flat, glabrous (or sometimes pubescent beneath on the obscure midrib), 6–9 mm. long, 5–7 mm. wide, at base widely cuneate to the ill-defined short entire ciliate petioles. Racemes brownish-pubescent, 4–8-flowered, elongated, the peduncle becoming 20–25 mm. long, the pedicels 2–5(–7) mm. long, mostly shorter than the obovate-oblong bractlets. Calyx spongy at base, the sepals 4–5 mm. long, obovate-oblong, obtusely rounded, ciliate throughout.

Corolla 7–8 mm. long, pale violet-purple to white, widely campanulate, glabrous throughout, the upper lip nearly circular, the three lower lobes nearly as large. Stamens glabrous, the anther less than half the length of the filament. Capsule 2–3 mm. long, obovoid.

NETHERLANDS NEW GUINEA: Mt. Wilhelmina, alt. 3400 m., *L. J. Brass & E. Myer-Drees 9682* (AA, TYPE, ANSP), Sept. 1938, in flower and fruit (rather wet grassy place along a small river, the whole plant apparently somewhat violet-tinged, the corolla being pale violet within and nearly white externally); Mt. Wilhelmina, alt. 3900–4250 m., alpine grassland, northern slopes, *Brass & Myer-Drees 10092, 10094* (both AA, ANSP), southern slopes, *Brass & Myer-Drees 10098, 10101, 10104* (all AA, ANSP). No. *10092* differs from the others in the ciliation of the sepals being shorter and partial (as in other species), but the leaf-blades are oval as in *H. ciliata*. No. *10094* is said to be "common on old rock screes," and no. *10101* "plentiful on rocky limestone slopes."

*8. **Hebe rigida** sp. nov. PLATE IV, B.

Frutex ramosissimus, rigidus; caulis pilis brevibus patentibus pubescens; folia multa, oblongo-elliptica, obtusa, crenato-dentata, glabra, majora 0.5–0.7 cm. longa, 3–4 mm. lata; racemi 1–3 floribus compositi; sepala 4–5 mm. longa, anguste oblonga, glabra; corolla 7–8 mm. longa, atropurpurea, late campanulata, glabra; capsula 4 mm. longa, obovoidea.

Stiff shrub, 2–4 dm. tall, with many rigidly erect stems from the slightly spreading rhizomatous base, these distally with many ascending-erect blackish purple branches. Stem pubescent with short spreading hairs, tardily glabrescent below. Leaves numerous and close-set (the short internodes of the lower part of the stem marked as in the other species), the blades oblong-elliptic, obtuse, crenate-dentate, glabrous (with hardly evident midrib), 5–7 mm. long, 3–4 mm. wide, at base cuneate to the ill-defined short entire ciliate petioles, both blades and petioles involutely hollowed. Racemes pubescent with short hairs, 1–3-flowered, short, the peduncle 4–12 mm. long, the pedicels 3–5 mm. long, shorter than or equaling the linear-oblong bractlets. Calyx not spongy at base, the sepals 4–5 mm. long, narrowly oblong, obtusely rounded, the margin entire and glabrous. Corolla 7–8 mm. long, dark purple, widely campanulate, glabrous throughout, the upper lip nearly circular, the three lower lobes similar and nearly as large. Stamens glabrous, the anthers less than half the length of the filaments. Capsule 4 mm. long, obovoid.

NETHERLANDS NEW GUINEA: Northern slope of Mt. Wilhelmina, alt. 4100 m., *L. J. Brass & E. Myer-Drees 10090* (ANSP, TYPE, AA), Sept. 1938, in flower and fruit (common on tussock-grass slopes, often growing in moss-cushions).

9. **Hebe Brassii** Pennell in Brittonia **2:** 185. 1936. PLATE V, A.

BRITISH NEW GUINEA: Mt. Albert Edward, *L. J. Brass 4498* (TYPE).

*10. **Hebe tenuis** sp. nov. PLATE V, B.

Suffrutex repens, ramosus, 1–1.5 dm. altus; caulis pilis minutis incurvis pubescens; folia elliptica, rotundata, crenato-dentata, glabra, glutinosa, majora 0.7–0.9 cm. longa, 4–6 mm. lata; racemi 3–7 floribus laxe compositi; sepala 4 mm. longa, oblanceolata vel obovata, glabrata; corolla 7 mm. longa, alba, campanulata, glabra; capsula 4 mm. longa, obovoidea.

Suffrutescent and extensively repent, distally ascending, 1–1.5 dm. tall, laxly branched. Stems finely pubescent with minute incurved hairs, tardily glabrescent below. Leaves shorter than or about equaling the internodes (which are rather longer than those of the erect bushy species, and with nodes as clearly marked), the blades elliptic, rounded at apex, crenate-dentate, flat, glabrous (with evident midrib), somewhat glutinous, 7–9 mm. long, 4–6 mm. wide, at base cuneate to the short flattened ciliate petioles. Racemes finely appressed-pubescent (with minute incurved hairs), 3–7-flowered, lax, the peduncle becoming 30–40 mm. long, the pedicels 7–10 mm. long, about twice as long as the oblanceolate bractlets. Sepals 4 mm. long, oblanceolate to obovate, rounded, slightly ciliolate to glabrous. Corolla 7 mm. long, white, campanulate, glabrous throughout, the upper lip rounded, the three lower lobes slightly smaller, rounded. Stamens glabrous, the anthers about half the length of the filaments. Capsule 4 mm. long, obovoid.

NORTHEASTERN NEW GUINEA: Summit of Mt. Sarawaket, alt. 4100 m., *Mary S. Clemens 5642* (AA, TYPE), Apr. 8, 1937, in flower (among open grass and shrublets).

11. **Hebe Vanderwateri** (Wernham) Van Steenis in Bull. Jard. Bot. Buitenzorg III. **13**: 252. 1934.

Based upon *Veronica Vanderwateri* Wernham in Trans. Linn. Soc. II. Bot. **9**: 121. 1916, describing a plant collected by C. Boden Kloss in 1912–13 on Carstensz Peak, Netherlands New Guinea.

12. **Hebe diosmoides** (Schlechter) Pennell in Brittonia **2**: 184. 1936.

Based upon *Veronica diosmoides* Schlechter in Bot. Jahrb. **59**: 111. 1924, describing a plant collected by Sir William MacGregor in 1889 on Mt. Victoria in British New Guinea.

11. **Veronica** Linnaeus

Since *Veronica Archboldii* was described seven years ago, several more members of this genus have been noted in collections from New Guinea, all of them similarly pertaining to the group of *V. serpyllifolia* L. From that species and its more cosmopolitan subspecies *humifusa* (Dickson) Vahl these all differ in the less hairy capsules, and, excepting the diminutive *V. platycarpa*, in the relatively wider and more toothed leaf-blades as well. What may be somewhat arbitrarily accounted the species of *Veronica* in New Guinea differ as follows:

A. Capsule widest about midway of its length, often exceeded by the sepals; racemes becoming many-flowered; leaf-blades elliptic or slightly longer, crenate-dentate; stems 1–4 dm. tall. . . . . .1. *V. Archboldii.*

AA. Capsule widest near the base, exceeding the sepals; racemes few-flowered; leaf-blades oblong-elliptic, crenate-serrate with few teeth; stems less than 1 dm. tall, the whole plant smaller. . . . . .2. *V. platycarpa.*

1. **Veronica Archboldii** Pennell in Brittonia **2**: 182. 1936.

The following, tentatively considered as subspecies, may prove specifically distinct. In all the aspect is similar, and there is equal possibility that further collecting may break down the validity of the characters adduced. Analogous to the wide distribution of *Veronica serpyllifolia* and its subspecies, this is being considered as a single species occurring throughout the mountain ranges of New Guinea. The subspecies yet known may be distinguished as follows:

A. Sepals about the length of the capsule (slightly shorter to longer than); corolla pale blue or white; pubescence of stem distally and of pedicels consisting of minute ascending-incurved hairs; leaf-blades little longer than wide, more evidently crenate-dentate. . . . . .1b. Subsp. *ellipticophylla.*

AA. Sepals much longer than the capsule; leaf-blades with fewer and shallower dentations.
  B. Leaf-blades slightly elongated, 1½–2 times as long as wide; pubescence of minute ascending-appressed hairs; corolla "pale purple, streaked with white." ....1a. Subsp. *typica*.
  BB. Leaf-blades little longer than wide; pubescence of fine spreading hairs; corolla "blue"..1c. Subsp. *patulifera*.

1a. **Veronica Archboldii** subsp. **typica.**

Veronica Archboldii Pennell in Brittonia **2:** 182. 1936.

British New Guinea: Mt. Albert Edward, *L. J. Brass 4403* (type), and Murray Pass, Wharton Range, *Brass 4941*.

*1b. **Veronica Archboldii** subsp. **ellipticophylla** subsp. nov.

Caules 2–4 dm. longi, pilis adscendenti-incurvis minute pubescentes; folia elliptica, 0.7–1.5 cm. longa, 5–12 mm. lata; sepala 4–5 mm. longa, oblongo-lanceolata; capsula 3 mm. longa.

Stems widely repent, ascending distally, 2–4 dm. long, finely pubescent with minute ascending-incurved hairs. Leaf-blades elliptic, 7–15 mm. long, 5–12 mm. wide, dentate with low teeth. Pedicels slightly longer than calyces, finely pubescent with incurved-ascending hairs. Sepals oblong-lanceolate, becoming 4–5 mm. long. Corolla pale blue or white. Capsule 3 mm. long, 4 mm. wide, notched ¼ depth. Seeds 1 mm. long.[11]

Netherlands New Guinea: Lake Habbema, north of Mt. Wilhelmina, alt. 3225 m., *L. J. Brass 9313* (ANSP, type, AA), Aug. 1938, in flower and fruit (on burnt-over ground); 7–11 km. northeast of Mt. Wilhelmina, alt. 3400–3560 m., *Brass & Myer-Drees 9683, 9749, 9861* (all AA, ANSP), in grass and moss.

This appears to be the prevalent member of this group on and near Mt. Wilhelmina in the Snow Mountains of Netherlands New Guinea.

*1c. **Veronica Archboldii** subsp. **patulifera** subsp. nov.

Caules 1–2 dm. longi, pilis patentibus pubescentes; folia elliptica, 0.7–1 cm. longa, 5–7 mm. lata; sepala 4–5 mm. longa, lineari-oblonga; capsula parva.

Stems widely repent, ascending distally, 1–2 dm. long, distally finely pubescent with spreading hairs. Leaf-blades elliptic, 7–10 mm. long, 5–7 mm. wide, dentate with low teeth. Pedicels shorter than or the lower equaling the calyces, finely pubescent with spreading hairs. Sepals linear-oblong, becoming 4–5 mm. long. Corolla "blue." Capsule small, not seen mature (perhaps abnormally atrophied).

Netherlands New Guinea: Northern slope of Mt. Wilhelmina, alt. 4050 m., *L. J. Brass & E. Myer-Drees 10163* (AA, type. ANSP), Sept. 1938, in flower (on a wet tussock-grass slope).

2. **Veronica platycarpa** Pennell in Notulae Naturae **23:** 1. 1939.

Collected by Mary S. Clemens (no. *10120*) in 1939 on Mt. Sarawaket, Northeastern New Guinea.

12. **Sopubia** Buch. Ham.

One species represented, the Indo-Malayan *S. trifida* Buch. Ham., by *Brass 4819*, from British New Guinea (already reported in Brittonia

---

[11] About twice the length of the seeds of *Veronica serpyllifolia* L. and *V. serpyllifolia humifusa* (Dickson) Vahl. This is the only subspecies of *V. Archboldii* of which seeds have been seen.

2: 187. 1936), and *Mary S. Clemens 10736,* recently gathered near the Kajabit Mission in the Morobe District, Northeastern New Guinea.

13. **Centranthera** R. Brown

One species represented, the Indo-Malayan *C. cochinchinensis* (Lour.) Merr., reported by Schlechter in Bot. Jahrb. **59:** 112. 1924 (as *C. hispida* R. Br.), and by me in Brittonia **2:** 187. 1936 (for *Brass 3574 & 5703*) and in Jour. Arnold Arb. **20:** 81. 1939 (for *Brass 7815 & 8270*). All the cited collections are from British New Guinea.

14. **Buchnera** Linnaeus

Schlechter credited only a single species to New Guinea, but, as might be anticipated from the number westward in the Malay Archipelago and southward in northern Australia, there are several. Those now known may be distinguished as follows:

A. Corolla externally somewhat hairy; inflorescence densely hairy...1. *B. tomentosa.*
AA. Corolla externally glabrous; inflorescence less hairy.
    B. Calyx and bracts finely pubescent over entire surface, the calyx not ridged; middle and lower leaf-blades lance-oblong, dentate..........2. *B. urticifolia.*
    BB. Calyx and bracts hairy on ribs and margins, or else glabrous; middle leaf-blades lanceolate or nearly linear, the lowest wider and dentate.
        C. Bracts ciliate, at least the upper ovate; calyx finely 10-ribbed, the ribs usually evident by reason of the ascending scabrous hairs, but varying to glabrous; capsule equaling or slightly exceeding the calyx; flowers more than ten, usually approximating to form a rather dense spike..3. *B. ciliata.*
        CC. Bracts ciliolate, the upper ovate with a caudate tip; calyx not ribbed, glabrous except for minute ciliolation of lobes; capsule not seen; flowers less than ten, scattered in an open spike..................4. *B. rariflora.*

1. **Buchnera tomentosa** Blume, Bijdr. Fl. Nederl. Ind. 741. 1825.

Originally described from Java. By Schlechter (l. c. 113) this was considered to be the only species in New Guinea, specimens being cited from Netherlands and Northeastern New Guinea, and from the Bismarck Archipelago. None of these collections have been seen and they may not all fit the concluding note, which characterizes the Papuan plant as differing from *B. urticifolia* in its larger flowers and its stronger hairiness, the hairs being mostly very thick on the rachis of the inflorescence.

NETHERLANDS NEW GUINEA: Morobe District, in grassland, alt. less than 1500 m., Boana, *Mary S. Clemens 41619;* Wantoat, *Clemens 11208, 40864* (flowers varying from white to pink).

2. **Buchnera urticifolia** R. Brown, Prodr. Fl. Nov. Holl. **1:** 437. 1810.

Originally described from the tropical coastland of northeastern Australia, the present Queensland. Occurs in both western and eastern New Guinea, on open grassland at low altitudes.

NETHERLANDS NEW GUINEA: Cyclops Mts., *K. Gjellerup 500* (GH); Merauke, *G. Versteeg 1837* (GH). NORTHEASTERN NEW GUINEA: Morobe District, Kajabit Mission, *Mary S. Clemens.* BRITISH NEW GUINEA: Urunu, *Brass 4821;* Fly River, *Brass 7813, 8253.*[12]

---

[12] Already reported in Jour. Arnold Arb. **20:** 82. 1939. These are the plants covered by contrast "A" of the key.

*3. **Buchnera ciliata** sp. nov.

Caulis 3–5 dm. altus, laxe pubescens glabratusve, simplex vel pauciramosus; folia scabro-pubescentia, tricostata, integra dentatave, infima fere ovalia et brevia, intermedia majora, saepe oblonga, 4 cm. longa, superiora lineari-lanceolata; spica tenuis, 10–15 paribus florum composita; bracteae 3–4 mm. longae, ovatae, acuminatae, ciliatae; calycis tubus 4 mm. longus, 10-costatus, costis scabro-pubescentibus vel glabris, lobis 1 mm. longis, ovato-lanceolatis, ciliolatis; corolla extus glabra, tubo 6–7 mm. longo ore intus villuloso, lobis oblanceolatis, inferioribus 3–4 mm. longis; capsula 5 mm. longa; semina 0.5 mm. longa.

Stem 3–5 dm. tall, loosely pubescent to glabrate, simple or distally slightly branched. Lowest leaves nearly oval, short, entire or dentate; middle leaves larger and longer, often nearly oblong, about 4 cm. long and 10 mm. wide, obtuse, entire or somewhat dentate; upper leaves linear-lanceolate, 5–6 cm. long, attenuate, the uppermost slightly smaller and slightly more remote, but seemingly continuous nearly or quite to the inflorescence; leaves scabrous-pubescent on both surfaces, 3-ribbed beneath. Spike slender, rather dense (the ascending fruiting calyces nearly or quite contiguous), of 10 to 15 pairs of flowers. Bracts 3–4 mm. long, ovate, acuminate or the upper acute, strongly ciliate (hairs 0.3–0.4 mm. long). Calyx-tube 4 mm. long, finely 10-ribbed, with short ascending scabrous hairs on ribs or sometimes glabrous; lobes 1–1.2 mm. long, ovate-lanceolate, attenuate, obscurely ciliolate. Corolla "pink," externally glabrous, the tube 6–7 mm. long, its orifice finely villose with white hairs, the lobes oblanceolate, truncate or nearly so, the lower longer, reaching 3–4 mm. long, the upper 2–3 mm. long. Capsule 5 mm. long, cylindric, equaling or slightly exceeding the calyx. Seeds about 0.5 mm. long, triangular-conic, brown, obscurely longitudinally lined.

NETHERLANDS NEW GUINEA: Balim River, northeast of Mt. Wilhelmina, alt. 1600 m., *L. J. Brass 11725* (ANSP, TYPE, AA), Dec. 1938, in flower and fruit (occasional on grassy deforested slope); "Zuid Nieuw Guinea pr. O. Kaba," *Branderhorst 89* (GH).

*4. **Buchnera rariflora** sp. nov.

Caulis 5–6 dm. altus, bifariam puberulentus, simplex; folia supra glabra, subtus scabrella, tricostata, fere integra, infima fere ovalia et brevia, intermedia etiam parva, oblongo-lanceolata, 2–2.5 cm. longa, superiora lineari-lanceolata, suprema brevissima et remota; spica tenuissima, circa 3 paribus florum composita; bracteae 3 mm. longae, lanceolato-ovatae, acuminatae, parum ciliolatae; calycis tubus 4 mm. longus, ecostatus, glaber, lobis 1 mm. longis, lanceolato-attenuatis, obscure scabrello-ciliolatis; corolla extus glabra, tubo 6–7 mm. longo ore intus villoso, lobis oblanceolatis, inferioribus 3–4 mm. longis; capsula non visa.

Stem 5–6 dm. tall, bifariously puberulent, simple throughout. Lowest leaves nearly oval, short, entire or dentate; middle leaves scarcely or not larger, oblong-lanceolate, 2–2.5 cm. long, 5 mm. wide, acute, entire; upper leaves linear-lanceolate, 2–2.5 mm. long, attenuate, the uppermost very short and remote, the inflorescence seeming long-peduncled; leaves above glabrous or slightly scabro-pubescent distally, beneath slightly scabrous, especially on the three ribs. Spike very slender, lax (the calyces less than or barely half length of internodes), of about 3 pairs of somewhat scattered flowers. Bracts 3 mm. long, lance-ovate or the upper ovate, acuminate to slightly caudate, obscurely ciliolate (hairs less than 0.05 mm. long).

Calyx-tube 4 mm. long, not evidently ribbed, glabrous; lobes 1 mm. long, lanceolate-attenuate, obscurely scabrellous-ciliolate. Corolla "pink," externally glabrous, the tube 6–7 mm. long, its orifice coarsely villose with projecting white hairs, its lobes oblanceolate, retuse, the lower longer, reaching 3–4 mm. long, the upper 2–2.5 mm. long. Capsule not seen.

BRITISH NEW GUINEA: Western Division, Tarara, Wassi Kussa River, *L. J. Brass 8571* (ANSP, TYPE, AA), Dec. 1936, in flower (rare in savanna-forest), *Brass 8597* (AA, ANSP).[13]

15. **Striga** Loureiro

In this Journal for 1939 (**20:** 83) I discussed the probability of there being valid color-distinctions between the various species of this genus. This view seems to be sustained by the further collections now reported. Also, as there prove to be objections to using either of the specific names employed by Schlechter for the two species of his enumeration in 1924, it becomes advisable to present a new summary of the species occurring in New Guinea.

A. Calyx 5-ribbed; upper lobes over half the length of lower lobes of corolla.
B. Corolla white, 12–15 mm. long, externally evidently pubescent, the throat distinctly wider than the tube and only slightly decurved; posterior calyx-lobe much shorter than the others................................1. *S. alba.*
BB. Corolla brightly colored, smaller.
C. Corolla orange-yellow; stems relatively tall and weak, much-branched...2. *S. Schlechteri.*
CC. Corolla reddish purple, 7–8 mm. long, externally minutely pubescent, the throat ill-defined though slightly longer than the tube, rather strongly decurved; posterior calyx-lobe as long as the others......3. *S. parviflora.*
AA. Calyx 10–15-ribbed; upper lobes less than half the length of lower lobes of corolla.
B. Corolla yellow, unlined, the anterior lobes reaching 3 mm. long; calyx 5 mm. long; plant 1–3 dm. tall.......................................4. *S. lutea.*
BB. Corolla white, venose-lined, the anterior lobes reaching 13 mm. long; calyx 10 mm. long; plant taller................................5. *S. Masuria.*

*1. **Striga alba** sp. nov.

Caulis 7–8 dm. altus, scabro-pilosus, ramosus; folia linearia, obtusa, scabro-pubescentia, majora 2–4 cm. longa; spicae elongatae, multiflorae; bracteae lineares, attenuatae, 5–6 mm. longae; bracteolae filiformes, 3.5–5 mm. longae; pedicelli brevissimi; calyx 6 mm. longus, tubo prominente 5-costato (costis scabro-pubescentibus), lobis subulatis scabris, supremo lobo caeteris breviore; corolla 13–15 mm. longa, alba, violaceo-lineata, tubo tenui, fauce tubulari-campanulato, extus pubescente, parum decurvo, labio superiore 2–3 mm. longo pubescente, labio inferiore 3.5–4.5 mm. longo glabrato; capsula 2.5 mm. longa, ovoidea; semina 0.5 mm. longa.

Stem 7–8 dm. tall, scabrous-pilose with short broad-based stiff spreading hairs, slightly branched distally. Leaves ascending, linear, obtuse, scabrous-pubescent, the largest 2–4 cm. long, 1–1.5 mm. wide. Spikes elongated, scabro-pubescent, that of the main stem of more than 20 opposite or sub-opposite pairs of flowers. Bracts linear, attenuate, mostly 5–6 mm. long, about ⅔ the length of calyx, the lower long and exceeding calyx. Bracteoles filiform, 3.5–5 mm. long. Pedicels scarcely 0.5 mm. long. Calyx 6 mm.

---

[13] Already reported in Jour. Arnold Arb. **20:** 83. 1939, as a variant of *Buchnera urticifolia*. These are the plants covered by contrast "AA" of the key.

long, its tube with 5 very prominent scabro-pubescent ridges that become distally the subulate scabro-pubescent calyx-lobes, four of which are equal, 2–2.5 mm. long, but the mid-posterior is more slender and short, 1.5 mm. long; intervening surface of the tube membranous, sparsely minutely pilose, cut more deeply on posterior side, so that the shortest calyx-lobe is free proximad to the others. Corolla 13–15 mm. long, white, the throat and lobes finely violet-lined, the tube slender and about equaling calyx (5–6 mm. long), glabrous within calyx; throat tubular-campanulate, slightly enlarged on upper side, 4–5 mm. long, slightly decurved, externally pubescent, the hairs seemingly slightly gland-tipped; upper lip 2–3 mm. long, arched, its lobes united over half their length, free and laterally upcurved, externally slightly glandular-pubescent, internally pubescent with appressed glandless hairs; lower lip 3.5–4.5 mm. long, deflexed-spreading (its laterally spreading lobes distinct from near base of lip), externally slightly glandular-puberulent, internally glabrous. Capsule 2.5 mm. long, ovoid, glabrous, enclosed within calyx-tube. Seeds about 0.5 mm. long,[14] irregularly tetrahedral, brown.

British New Guinea: Gaima, east bank of Lower Fly River, *L. J. Brass 8256* (ANSP, type, AA), Nov. 1936, in flower and fruit (common in thick grass, open savanna-forest, in lowland).

In 1939 (Jour. Arnold Arb. **20:** 83) I identified this plant as *Striga curviflora* (R. Br.) Benth., an opinion I wish now to reconsider. Robert Brown's brief description of *Buchnera curviflora* (Prodr. Fl. Nov. Holl. 438. 1810) should first be quoted: "*Buchnera curviflora,* scaberrima, foliis elongato-linearibus integerrimis patentibus, calycibus 5-striatis, labio superiore corollae retuso: inferiore 3-partito ter breviore." Our plant differs from this in its leaves being ascending rather than spreading, and in its upper lip being ⅔ instead of ⅓ the length of the lower lip of the corolla. In 1835 (in forming the combination *Striga curviflora* in Compan. Bot. Mag. **1:** 362) Bentham, who had seen only Brown's specimens for his account, called the leaves subspreading ("subpatentibus"), thus indicating that they were likely somewhat ascending, and added that the corolla-tube was pubescent, while he retained in full force the statement about the relatively small upper lip of the corolla. Years later, with the help of more collections, Bentham again treated the matter in his Flora Australiensis (**4:** 517) in 1869. There we learn that Brown's plant, the type of the species, was gathered on islands in the Gulf of Carpenteria in North Australia, and that the species is now known both in that province and in Queensland. Again we have the emphasis placed upon the shortness of the upper corolla-lip as a main criterion ("less than half as long as the lower"), while the length of the corolla is now given as "nearly or fully ¾ in.," a size too large for our plant. On Bentham's key of 1869 our species fits better the characterization of *S. multiflora,* which reads: "Corolla above ½ in. long, the upper lip more than half as long as the lower," except that the corolla is exactly ½ inch. But from *S. multiflora* Benth. of North Australia (as originally defined in Compan. Bot. Mag.

---

[14] Imperfect seeds, shaken from a capsule, are only 0.2–0.3 mm. long, but those lying in folder with specimen and presumably of this species have been described.

1: 363. 1835) our plant differs in not being much-branched, its leaves not spreading, its corolla not glabrous, and its habit not semi-decumbent. Finally, as to *S. curviflora* again, the scarcely decurved corolla of our plant must differ from that which suggested this name to Brown. On all these counts I think that our plant from New Guinea is different from either of these Australian species. Likely it differs in other characters as well, for Brown's description is meagre and Bentham's far from complete.

2. **Striga Schlechteri** sp. nov.

Caulis ramosissimus, debilis; folia longa; calyx 5-costatus; corolla lutea.

Stems much-branched, weak and rather tall (relative to *S. lutea*), the leaves longer, the calyx 5-ribbed, the corolla bright orange-yellow (but drying dark blue-gray), and both corolla and capsule smaller.

NORTHEASTERN NEW GUINEA: Constantinhafen, *R. Schlechter 14246* (TYPE, presumably in the Berlin Botanical Garden), March 1902, in flower and fruit.

Other collections cited by Schlechter show this as occurring elsewhere in Northeastern New Guinea.

This brief characterization is all that is given by Schlechter (in Bot. Jahrb. **59:** 114. 1924), but it seems sufficient to mark this as another new species. Certainly it can hardly be *Striga multiflora* Benth., above-mentioned, to which Schlechter assigned the plant, since Bentham's account of this in his Flora Australiensis (**4:** 517. 1869) gave the corolla as over ½ inch long, a size much above that of *S. lutea*. On the other hand it is just possible that Schlechter's plant was *S. parviflora*, but his identification of it as *S. multiflora* and the different color assigned to the flowers lead me to suppose that it is something else. *S. multiflora* was originally described as having a glabrous corolla, a detail so modified in the Flora Australiensis as to lead to the suspicion that several things were included in the latter account.

3. **Striga parviflora** (R. Brown) Benth. in Compan. Bot. Mag. **1:** 362. 1835.

Based upon *Buchnera parviflora* R. Brown, Prodr. Fl. Nov. Holl. **1:** 438. 1810, of tropical Australia, the type being stated by Bentham, Fl. Austral. **4:** 517. 1869, to have come from Keppel Bay, Queensland.

As previously reported (in Jour. Arnold Arb. **20:** 84. 1939), this was collected in British New Guinea at Port Moresby (*Brass 8780*), and now we may add several collections from near Kajabit Mission in the Morobe District, Northeastern New Guinea (*Mary S. Clemens 10676, 10745, 41170*).

4. **Striga lutea** Loureiro, Fl. Cochinch. 22. 1790.

Type actually from Canton, China. Merrill (in Trans. Amer. Philos. Soc. II. **24**(2)**:** 353. 1935) puts this in the synonymy of *Striga asiatica* (L.) Kuntze, but Linnaeus' *Buchnera asiatica* was a composite of whatever *Strigae* he knew, although his allusion to the corolla-limb being purple will likely prove distinctive. With which component to associate this earliest name must await more thorough revision.

To collections cited by Schlechter (l. c. 115), all from Northeastern

New Guinea, may be added a recent one from the Kajabit Mission in the Morobe District (*Mary S. Clemens 40771*).

5. **Striga Masuria** (Buch. Ham.) Benth. in Compan. Bot. Mag. **1:** 364. 1835.

In Wallich's Numerical List of Plants in the Museum of the East India Company, this species appears as numbers 3876 *Buchnera Wallichii* Benth. and 3877 *B. Masuria* Ham., under date of 1830. Both names were *nomina subnuda* (localities only being given), but the latter was validated by publication with description by Bentham in his Scrophularineae Indicae (p. 41) in 1835. Schlechter in 1924 (l. c. 115) seems to have been the first to validate the former, but his *Striga Wallichii* (Benth.) Schlechter does so only by including Bentham's account of the other as a synonym. The correct name for the species therefore remains *Masuria*, the name generally used since 1835.

A widespread oriental species that extends eastward to New Guinea, where it was reported by Schlechter from the northeastern part and has recently been gathered slightly farther south at the Kajabit Mission, Morobe, Northeastern New Guinea, by *Mary S. Clemens* (*10547a, 40658, 40772*).

16. **Euphrasia** Linnaeus

This proves to be one of the characteristic genera of alpine heights throughout New Guinea. Like *Hebe* in the same situations, the kinship of the Papuan species is definitely with the flora of New Zealand. Also like *Hebe*, the genus will prove to be a large one in New Guinea, with many species locally endemic to various mountain areas.

The clarity of the taxonomy of *Euphrasia* in New Guinea has been a welcome surprise to one who has puzzled over the difficult task of distinguishing its species in the North Temperate Zone. The boreal species, all of which are annual, are closely similar in corollas, stamens, capsules, seeds, calyces, and leaves, so that one must appeal to secondary features of leaf-dentation, indumentum, and size to distinguish the many local entities. But in New Guinea the characters are as consequential and well-marked as in any other genus of this family. The species are perennial, the habit either erect or repent, the corolla with short or long tube, the calyx-lobes rounded or acuminate, and the anthers distinct or coherent, uniformly or unequally awned. Those as yet known from New Guinea may be distinguished as follows:

A. Corolla externally glabrous, 10–11 mm. long, the lips as long as or longer than the tube; anthers glabrous, exserted; leaf-blades 3–5-lobulate; stem to 2 dm. tall . . . . 1. *E. papuana*.
AA. Corolla externally pubescent; anthers included, at least the orifices ciliate; leaf-blades 3-lobed, or the lower or all entire (all only in *E. culminicola*).
  B. Leaf-blades longer than wide, the lateral lobes less than 1/3 the length of the wide median lobe; lower lip deflexed, usually exceeding the upper lip of the corolla; stem ascending or erect.
    C. Stems shrubby, 1–3 dm. tall; calyx-lobes obtuse; corolla 12–14 mm. long, white to yellow, externally sparsely puberulent, the lower (8 mm.) slightly longer than the upper (6–7 mm.) lip . . . . 2. *E. Lamii*.
    CC. Stems suffruticose, less than 1 dm. tall; corolla violet to purple, evidently hairy externally.

D. Anthers cohering, one awn of anthers of shorter stamens much longer and thicker than the other anther-awns; corolla 12–15 mm. long, the campanulately widened throat and lips as long as or longer than the narrow tube; leaves glabrous.
  E. Lower distinctly exceeding upper lip of corolla, its length about that of the straight corolla-tube and -throat.
    F. Calyx-lobes obtuse or obtusish.
      G. Leaf-blades with a pair of short tooth-like obtuse lobes; corolla purple............................3. *E. cucullata.*
      GG. Leaf-blades entire, spatulate or obovate....4. *E. culminicola.*
    FF. Calyx-lobes acuminate; corolla white or very pale pink........ ....5. *E. mirabilis.*
  EE. Lower scarcely exceeding upper lip of corolla, its length about half of that of the decurved corolla-tube and -throat; calyx-lobes acuminate.......................................6. *E. curviflora.*
DD. Anthers distinct, the awns all equal in length, short; corolla 9–11 mm. long, the slender throat gradually or not widening from the tube, which together are at least twice as long as the lobes.
  E. Tube of corolla gradually widening to apex, its orifice not constricted; plant much-branched at base.
    F. Calyx-lobes acuminate; corolla pale violet, the galea straight continuously with the tube; capsule little shorter than calyx; leaves 5–6 mm. long, glabrous........................7. *E. rectiflora.*
    FF. Calyx-lobes rounded at apex; corolla lavender to dark violet, the galea shorter and curved continuously with the tube; capsule shorter than calyx (not surpassing the mid-portion of its lobes); leaves 3–4 mm. long, puberulent..............8. *E. spatulifolia.*
  EE. Tube of corolla constricted at mouth; leaves 3.5 mm. long, glabrous; stems simple or sparsely branched.............9. *E. scutellarioides.*
BB. Leaf-blades as wide as long, the lateral lobes ⅓ to ½ the length of the wide median lobe; lower lip deflexed-spreading, not or scarcely exceeding the upper lip of the pale corolla; anthers distinct, one awn of anthers of shorter pair slightly longer than the other anther-awns; stem repent.
  C. Corolla 8–10 mm. long, slightly and mostly sparsely pilose externally; orifice of anther-cells ciliolate (the hairs less than ¼ the width of the cell): calyx pilose to glabrate, the lobes obtuse with margins slightly revolute, not callose; leaves 2–4 mm. long, glabrate, the margin like that of the calyx-lobes; stems extensively repent, bifariously pubescent with recurved hairs.......................................10. *E. humifusa.*
  CC. Corolla 4–5 mm. long, hirsute-pubescent externally; orifice of anther-cells ciliate (the hairs over half the width of the cell); calyx more densely white-pubescent, the lobes rounded with margin strongly revolute and callose; leaves 1–3 mm. long, pubescent, ultimately glabrous, the margin like that of the calyx-lobes; stems more shortly spreading...........11. *E. callosa.*

1. **Euphrasia papuana** Schlechter in Bot. Jahrb. **59:** 116. 1924.

Collected by Sir William MacGregor in 1889 on Mt. Victoria in British New Guinea.

2. **Euphrasia Lamii** Diels in Nova Guinea Bot. **14:** 538. 1928.

Collected by H. J. Lam in 1920 at Doorman Peak, Netherlands New Guinea; two specimens cited but neither designated as type. *Lam 1587*, very abundant on flat sterile moorland, 3250 meters altitude, is also shown in his photograph in Die Vegetationsbilder **15:** *tab. 33.* 1924, and evidently reaches the proportions given in the original description of 1928. Accordingly, I take it as the type. The published field-note states that the corolla was white or bright yellow, sometimes with lilac spots on the lips, and was yellow on the throat. In contrast, *Lam 1644*, gathered among stones on open alpine slopes at 3520 meters altitude, was noted in the field as with corolla white, occasionally bright yellow, yellow at the throat, and the tube with violet stripes to the margin of the upper lip; I suspect from the allusion to striping as well as the different environment that no. *1644* is a different species and is probably the plant that I am now describing as *Euphrasia cucullata,* although unfortunately Mr. Brass has not told us the color-pattern of the latter. If so, the occasional bright yellow-flowered individuals may well be interspersed specimens of *E. Lamii,* such as might take slightly wetter spots. From Lam's map in Die Vegetationsbilder, Doorman Peak is less than a degree northwest of Wilhelmina Peak.[15]

*3. **Euphrasia cucullata** sp. nov.

Suffruticosa, ramosissima, diffusa, 5–10 cm. alta; caulis retrorse pubescens; folia obovato-spathulata, 5–6 mm. longa, glabra, margine apicem versus valde revoluta (cucullata), utrinque pari loborum triangulari-rotundatorum onusta, basi cuneata; flores pauci, axillares; calyx minute pilosus, 6–7 mm. longus, lobis ovatis rotundatis 2 mm. longis; corolla purpurea, extus hirsuto-pubescens, tubo 7–8 mm. longo angusto, labio superiore 5 mm. longo, inferiore 7–9 mm. longo lobis retusis aucto; antherarum cohaerentium thecae aristas inaequales ferentes, orificiis ciliatae; stylus pubescens; capsula 7 mm. longa, glabra; semina 1.5 mm. longa.

Suffruticose, much-branched below, the stems less than 1 dm. tall, pubescent with recurved hairs, diffusely ascending or decumbent. Leaves glabrous, obovate-spatulate, cuneate to base, about midway of length with a pair of triangularly rounded short lobes,[16] the median distal portion obovate (much wrinkled in drying), rounded, the margin so strongly revolute as to appear cucullate; larger leaves 5–6 mm. long, 2–3 mm. wide. Inflorescence of a few pairs of axillary flowers, these not closely successive. Pedicels 2 mm. long, pubescent. Calyx 6–7 mm. long, minutely pilose, the lobes 2 mm. long, ovate, rounded but with margin so recurved as at times to appear acutish. Corolla "purple," externally hirsute-pubescent, but glabrous beneath throat and on lobes distally, internally finely pubescent below posterior sinus,[17] elsewhere glabrous (except perhaps at base of tube), the tube 7–8 mm. long, narrow, slightly exceeding the calyx; upper lip 5 mm. long, slightly arched and hooded, the lobes free slightly (0.5 mm.) at apex; lower lip 7–9 mm. long, deflexed-spreading, the mid-anterior obovate, slightly longer than the semirectangular antero-lateral lobes, all retuse. Filaments glabrous (except probably at base); anthers all coherent, the cells ciliolate at margins of orifices, all awned (one awn of each posterior anther 0.5 mm. long, the other awns 0.2 mm. long,[18] the long awn stouter and projecting farther down into the orifice of the corolla). Style distally pubescent. Capsule 7 mm. long, 5 mm. wide, widely obovoid and somewhat flattened, retuse, glabrous. Seeds at least 1.5 mm. long, brownish, with longitudinal thin white ridges.

---

[15] If the anthers of *Euphrasia Lamii* had been described in detail, probably it would have been possible to associate it with some of the following species. At present it is impossible to identify its variety *Versteegii* Diels (in Nova Guinea Bot. **14**: 539. 1928), collected by Versteeg (no. *2473*) in 1913 on the Orange Mountains ("Oranje-Gebirge") in Netherlands New Guinea.

[16] These are shorter and less divaricate than in *Euphrasia mirabilis,* the lobes of which are also placed about the middle of the leaf's length (not so distally as is implied in my original description of that plant). The leaf-blade is distally more strongly cucullate in *E. cucullata* than in *E. mirabilis.*

[17] Such fine pubescence beneath sinus near apex of upper lip is developed also in *E. mirabilis.*

NETHERLANDS NEW GUINEA: Mt. Wilhelmina, 2 km. east of summit, alt. 3800 m., *L. J. Brass & E. Myer-Drees 10118* (ANSP, TYPE, AA), Sept. 1938, in flower (alpine grassland, plentiful in sterile shallow soil of sandstone crests); 3 miles east of summit, Mt. Wilhelmina, alt. 3650 m., *Brass 9412* (AA, ANSP) (scattered over black boggy slopes).

4. **Euphrasia culminicola** Wernham in Trans. Linn. Soc. II. Bot. **9:** 121. 1916.

Collected by C. Boden Kloss in 1912–13 on Carstensz Peak, in Netherlands New Guinea.

5. **Euphrasia mirabilis** Pennell in Brittonia **2:** 188. 1936.

Collected by L. J. Brass, no. *4271,* in 1933 on Mt. Albert Edward, in British New Guinea.

*6. **Euphrasia curviflora** sp. nov.

Caules laxi, 8 cm. et ultra longi, pilis patentibus hirsutuli; folia glabra, oblanceolata vel obovato-spathulata, 5 mm. longa, margine apicem versus revoluta, utrinque pari loborum lanceolato-oblongorum brevium onusta, basi anguste cuneata; flores pauci, axillares; calyx glabratus, 7.5 mm. longus, lobis ovatis acuminatis 3.5 mm. longis; corolla violaceo-purpurea, extus pubescens, tubo 5 mm. longo angusto, labio superiore 4 mm. longo, inferiore vix longiore lobis retusis aucto; antherarum cohaerentium thecae aristas inaequales ferentes, orificiis ciliolatae; capsula 6 mm. longa, glabra; semina non visa.

Stems lax, at least 8 cm. long, probably ascending, finely hirsute with spreading hairs. Leaves glabrous, oblanceolate to obovate-spatulate, narrowly cuneate to base, about midway of length with a pair of lance-oblong short lobes, the median distal portion rounded-ovate, the margin somewhat revolute and slightly cucullate, those seen 5 mm. long, 2–2.5 mm. wide. Inflorescence of a few pairs of axillary flowers. Pedicels scarcely 1 mm. long, apparently glabrate. Calyx 7.5 mm. long, minutely pubescent below sinuses, becoming glabrous throughout, the lobes 3.5 mm. long, ovate, acuminate, slightly revolute. Corolla externally pubescent, hirsutely so on tube and minutely villose on galea, the lobes distally glabrate, internally pubescent below posterior sinus, the tube 5 mm. long, narrow, about equaling the calyx, distally campanulate, widening to a throat 4 mm. long; upper lip 4 mm. long, arched, the lobes free slightly at apex and laterally recurved 0.5 mm.; lower lip scarcely longer, deflexed-spreading, the mid-anterior slightly the widest, all retuse. Filaments glabrous (at least distally); anthers all coherent, the cells ciliolate at margins of orifice, all awned (one awn of each posterior anther 0.3 mm. long, the others 0.1 mm. long, the long awn stouter and projecting farther down into the orifice of the corolla). Capsule 6 mm. long, 4 mm. wide, obovate-rounded to apex, flattened, glabrous. Seeds not seen.

NORTHEASTERN NEW GUINEA: Morobe District, Rawlinson Range, alt. over 3600 m., *Mary S. Clemens s. n.* (ANSP, TYPE), July 1941, in flower (open wet hills and dale).

---

[18] About twice as long as the corresponding awns of *E. mirabilis*.

Of this I have seen only a few pieces, including a flower, a nearly ripe capsule, and another capsule long past dehiscence, all culled from the only collection of *Euphrasia callosa,* to be described below. As to color, the common label states: "mixture, purple & white, tube yellow of big fl.," whence we know that this, the big flower, had a yellow corolla-tube, a color still evident on the anterior side of the throat. The edge of the lower corolla-lobes seems still a dark violet, whence I infer that the main part of the corolla was violet-purple.

*7. **Euphrasia rectiflora** sp. nov.

Suffruticosa, basi ramosa, erecta vel diffusa, 1–7 cm. alta; caulis retrorse pubescens vel glabrata; folia glabra, oblanceolato-spathulata, 5–6 mm. longa, margine apicem versus revoluta, utrinque pari loborum triangulari-oblongorum rotundatorum onusta, basi cuneata; flores pauci, axillares; calyx glaber, 7 mm. longus, lobis lanceolatis acuminatis 3 mm. longis; corolla violacea, extus minute pubescens, tubo 10 mm. longo angusto elongato, labiis 3 mm. longis, inferiore lobis rotundato-truncatis aucto; antherarum distinctarum thecae aristas aequales ferentes, orificiis ciliolatae; stylus minute pubescens; capsula 5–6 mm. longa, glabra; semina non visa.

Suffruticose, less than 7 cm. tall, often minute, much-branched at base, the stems erect or diffuse-decumbent, finely pubescent with recurved hairs to glabrate. Leaves glabrous, oblanceolate-spatulate, the upper nearly obovate, cuneate to base, about midway of length with a pair of triangular-oblong rounded lobes, the mid-blade distally broadly rounded, its margin revolute (but hardly cucullate) and becoming indurated, the larger leaves 5–6 mm. long, 2–3 mm. wide. Inflorescence of a few (1 or 2) pairs of axillary flowers, borne contiguously at the summit of the stems. Pedicels less than 1 mm. long, glabrous. Calyx becoming 7 mm. long, glabrous, the lobes 3 mm. long, lanceolate, acuminate, the margin strongly revolute. Corolla "pale violet with yellow spot inside,"[19] apparently lined, externally finely pubescent, the tube anteriorly and the lower lobes glabrous, internally minutely pubescent below posterior sinus, the tube 10 mm. long, narrow, gradually widening distally, over twice the length of the calyx; upper lip 3 mm. long, narrowly arched, scarcely or not hooded, the lobes free slightly at apex (0.5 mm.), tending to spread laterally; lower lip 3 mm. long, widely deflexed-spreading, the lobes 2 mm. long, rounded-truncate, slightly widening distally. Filaments glabrous (except perhaps at base); anthers distinct, the cells ciliolate at margins of orifice, all equally awned (awns slender, 0.3 mm. long). Style distally finely pubescent. Capsule 5–6 mm. long, 4 mm. wide, obovate, flattened. Seeds not seen.

NETHERLANDS NEW GUINEA: Lake Habbema, north of Mt. Wilhelmina, alt. 3225 m., *L. J. Brass 9192* (AA, TYPE, ANSP), Aug. 1938, in flower and fruit (among dwarf grasses of exposed boggy slopes); 7 km. northeast of Mt. Wilhelmina, alt. 3560 m., *Brass & Myer-Drees 9794* (AA, ANSP) (on very wet peat in grassy valley).

*8. **Euphrasia spatulifolia** sp. nov.

Suffruticosa, caespitosa, diffusa, 1–7 cm. alta; caulis pilis patentibus pubescens; folia minute pubescentia, oblanceolato-spathulata, 3–4 mm. longa, margine apicem versus valde revoluta (cucullata), utrinque pari loborum oblongorum onusta, basi cuneata; flores pauci, axillares; calyx hispidulus, 7 mm. longus, lobis oblongis rotundatis 3 mm. longis; corolla violacea, extus pubescens, tubo 9 mm. longo tenui elongato, labio superiore 2 mm. longo, inferiore 4 mm. longo lobis rotundato-truncatis aucto; antherarum distinctarum thecae aristas aequales ferentes, orificiis ciliatae; stylus minute pubescens; capsula 4–5 mm. longa; semina non visa.

---

[19] From label of no. *9794;* for no. *9192* stated as "pale purple-pink."

Suffruticose, forming clumps up to 1 dm. in diameter. Plant less than 7 cm. tall, branched throughout, the stems diffuse from base and ascending, pubescent with spreading slightly recurved hairs. Leaves minutely pubescent, oblanceolate-spatulate, cuneate to base, about midway of length with a pair of oblong rounded or obtuse lobes, the mid-blade distally broadly rounded, its margin strongly revolute and somewhat hooded, the larger leaves 3–4 mm. long, 1.5–2 mm. wide. Inflorescence of a few (1 or 2) pairs of axillary flowers. Pedicels 1 mm. long. Calyx becoming 7 mm. long, minutely pilose with stiff hairs, the lobes 3 mm. long, oblong, truncately rounded, the margin narrowly revolute. Corolla "lavender" (no. *10044*) or "dark violet" (no. *9731*), with the "lowest petal orange at base," externally grayish-pubescent, the throat anteriorly and the lobes distally glabrous, internally minutely pubescent below posterior sinus, the tube 9 mm. long, narrow, proximally very slender, distally widening to form throat and somewhat decurved, over twice the length of the calyx; upper lip 2 mm. long, arched and decurved 1 mm., then the lobes widely spreading, rounded; lower lip 4 mm. long, deflexed-spreading, the lobes 2–2.5 mm. long, rounded-truncate, slightly widening distally. Filaments glabrous (at least distally); anthers distinct, the cells ciliate at margins of orifice, all equally awned (awns slender, 0.2 mm. long). Style distally finely pubescent. Capsule 4–5 mm. long, 2–3 mm. wide, obovate, flattened. Seeds not seen.

NETHERLANDS NEW GUINEA: Northern slopes of Mt. Wilhelmina, alt. 3950 m., *L. J. Brass & E. Myer-Drees 10044* (AA, TYPE, ANSP), Sept. 1938, in flower and old fruit (shallow soil of old grassy scree); 11 km. northeast of summit of Mt. Wilhelmina, alt. 3400 m., *Brass & Myer-Drees 9731* (AA, ANSP) (on rather wet sandy slope).

9. **Euphrasia scutellarioides** Wernham in Trans. Linn. Soc. II. Bot. **9**: 122. 1916.

Collected by C. Boden Kloss in 1912–13 on Carstensz Peak, Netherlands New Guinea.

*10. **Euphrasia humifusa** sp. nov.

Herba perennis, effusa, repens; caulis 1 dm. longus, bifariam retrorse pubescens; folia glabra vel proxime pilosa, late ovata, 2–3 mm. longa, margine apicem versus parum revoluta, utrinque pari loborum oblongorum obtusorum onusta, basi anguste cuneata; flores pauci, irregulariter axillares; calyx hispidulus vel glabratus, 3–4 mm. longus, lobis ovatis vel ovato-oblongis 1.5 mm. longis; corolla rubescens, extus villosulo-pubescens, tubo 5 mm. longo angusto recto; labio superiore 2.5 mm. longo, inferiore 3 mm. longo lobis retusis aucto; antherarum distinctarum thecae aristas subaequales ferentes, orificiis ciliolatae; stylus glabratus; capsula 4 mm. longa, glabra; semina 1 mm. longa.

Perennial, widely effuse. Stems up to 1 dm. long, wholly prostrate, partially repent, much-branched, bifariously pubescent with recurved-appressed hairs. Leaves glabrous or pilose proximally above on midrib or with a few hairs at tip of blade or lobes, widely ovate in inclusive outline, narrowly cuneate to a semi-petiolate or fully petiolate base, about midway of length with a pair of divergent oblong obtuse lobes, the mid-blade distally oval or rounded-ovate, its margin relatively slightly revolute; larger leaf-blades 2–3 mm. long and wide, the petioles sometimes reaching 1 mm. long. Calyx 3–4 mm. long, pilose with stiff hairs to usually glabrate, the lobes 1.5 mm. long, ovate or ovate-oblong, obtuse, so revolute as at times to appear acute. Corolla externally pinkish, internally white, the lips (or perhaps only lower lip) pink,[20] externally finely pubescent (usually villosely so), the throat anteriorly and the lobes distally glabrous, internally minutely pubescent below posterior sinus, the tube 5 mm. long, narrow, straight, nearly twice length of calyx, distally abruptly widening to a campanulate throat 2 mm. long; upper lip 2.5 mm. long, straight or slightly decurved, arched, the lobes free only near apex (0.2–0.3 mm. long), upcurving; lower lip 3 mm. long, deflexed-spreading, the lobes 2–2.3 mm. long, oblong, retuse. Filaments glabrous (at least distally); anthers distinct, the cells ciliolate on margins of orifice, the awns slightly unequal (awns slender, 0.1 mm. long, except one of the shorter pair of anthers which is about 0.2 mm. long). Style distally nearly glabrous (obscurely sparsely puberulent). Capsule 4 mm. long, 3 mm. wide, flattened, obovate-rounded, emarginate, the valves in dehiscence strongly recurved-spreading. Seeds 1 mm. long, oval with distally flattened end, blackish, with white longitudinal wing-like ridges.

NETHERLANDS NEW GUINEA: 4 km. northeast of summit of Mt. Wilhelmina, alt. 3650 m., *L. J. Brass & E. Myer-Drees 9971* (ANSP, TYPE, AA), Sept. 1938, in flower and fruit (in shade of tussock grasses); 2 km. east of summit of Mt. Wilhelmina, *Brass & Myer-Drees 10187* (AA, ANSP) (in alpine grassland).

*11. **Euphrasia callosa** sp. nov.

Herba perennis, effusa, prostrata; caulis 5 cm. longus, ramosus, hirsuto-pubescens; folia glabra glabratave, late ovata, 1–3 mm. longa, margine callosa apicem versus valde revoluta (cucullata), utrinque pari loborum oblongorum ovatorumve onusta, basi cuneata; flores pauci, irregulariter axillares; calyx hirsuto-pubescens, 3–4 mm. longus, lobis oblongis ovatisve 1 mm. longis; corolla albida, extus pubescens, tubo 2.5–4 mm. longo recto, labiis 1.5–2.5 mm. longis, inferiore lobis truncatis aucto; antherarum distinctarum thecae aristas subaequales ferentes, orificiis ciliatae; stylus minute pubescens; capsula 3 mm. longa, glabra; semina 0.7 mm. longa.

Perennial, widely effuse. Stems up to 5 cm. long, wholly prostrate, hirsute-pubescent on all sides with spreading hairs. Leaves glabrous, or slightly pubescent beneath laterally, widely ovate in inclusive outline, cuneate to a semipetiolate base, about midway of length with a pair of divergent oblong or ovate rounded lobes, the mid-blade distally ovate-rounded, the margin strongly revolute, even somewhat hooded, that of the lobes also revolute, all revolute margins and sometimes most of blade strongly callose; larger leaves 1–3 mm. long and wide. Inflorescence of several axillary flowers, occurring irregularly at various nodes. Pedicels 1–2 mm. long, hirsute-pubescent. Calyx 3–4 mm. long, hirsute-pubescent on ribs, the lobes 1–1.2 mm. long, oblong to ovate, distally acutish to rounded, with revolute strongly callose margin. Corolla probably white or whitish,[21] externally pubescent, the throat anteriorly and the lobes distally glabrous, internally minutely pubescent below posterior sinus, the tube (and throat) 2.5–4 mm. long, straight, little longer than calyx; upper lip 1.5–2.5 mm. long, straight or nearly so, the lobes slightly distinct and recurved near apex; lower lip about as long, deflexed-spreading, the lobes 1–1.5 mm. long, truncate or shallowly retuse. Filaments glabrous (at least distally); anthers distinct, the cells ciliate on margins of orifice, the awns slightly unequal (as in *E. humifusa*). Style distally finely pubescent. Capsule 3 mm. long and wide, flattened, rounded, glabrous. Seeds 0.7–0.8 mm. long, grayish, with longitudinal white ridges.

---

[20] Field-note to label for no. *9971*: "fls. white within, the outside tinged with pink"; for no. *10187*: "fls. very pale pink, lip darker."

NORTHEASTERN NEW GUINEA: Morobe District, Ulap Trail, *Mary S. Clemens 41137* (ANSP, TYPE, AA), Apr. 6, 1940, in flower and fruit.

Presumably this locality is in the Rawlinson Range, from which Mrs. Clemens has sent to the Academy another collection made in July 1941, on "open wet hills and dale" at over 3600 meters altitude; it was this collection from which the few pieces of *Euphrasia curviflora* have been extracted. Still another collection, her no. *6047*, gathered March 29, 1937, and credited only to the Morobe District at the surprisingly low altitude of 2400 to 2700 meters ("8–9000 ft.") is at the Arnold Arboretum.

EXPLANATION OF PLATES

All plates are photographs of herbarium specimens and are reproduced slightly over ¼ actual size.

PLATE I

A. *Lindernia papuana;* type. B. *Torenia crenata;* type.

PLATE II

A. *Hebe rubra;* isotype. B. *Hebe thymelaeoides;* isotype.

PLATE III

A. *Hebe albiflora;* type. B. *Hebe polyphylla;* type.

PLATE IV

A. *Hebe ciliata;* type. B. *Hebe rigida;* type.

PLATE V

A. *Hebe Brassii;* isotype. B. *Hebe tenuis;* type.

ACADEMY OF NATURAL SCIENCES,
PHILADELPHIA, PA.

---

[21] Type collection labeled "fls. white with purple," probably meaning white with purple lines. As to other collection, intermixed with *Euphrasia curviflora,* I take the present species to be the pale-flowered component; see discussion under that species.